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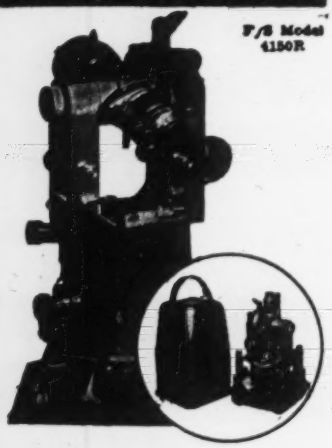

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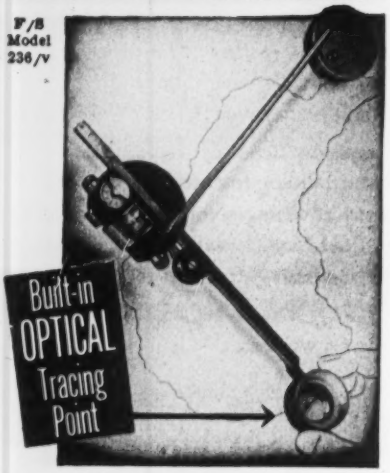

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Contents on page 17

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E. E. Halmos Jr. ..... *Managing Editor*
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J. J. Christie ..... *National Affairs*
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Robert F. Boger
Publisher

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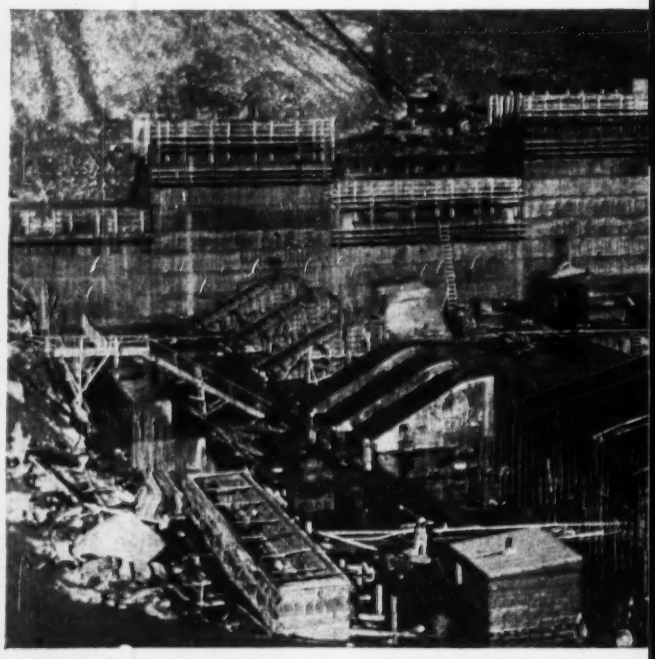

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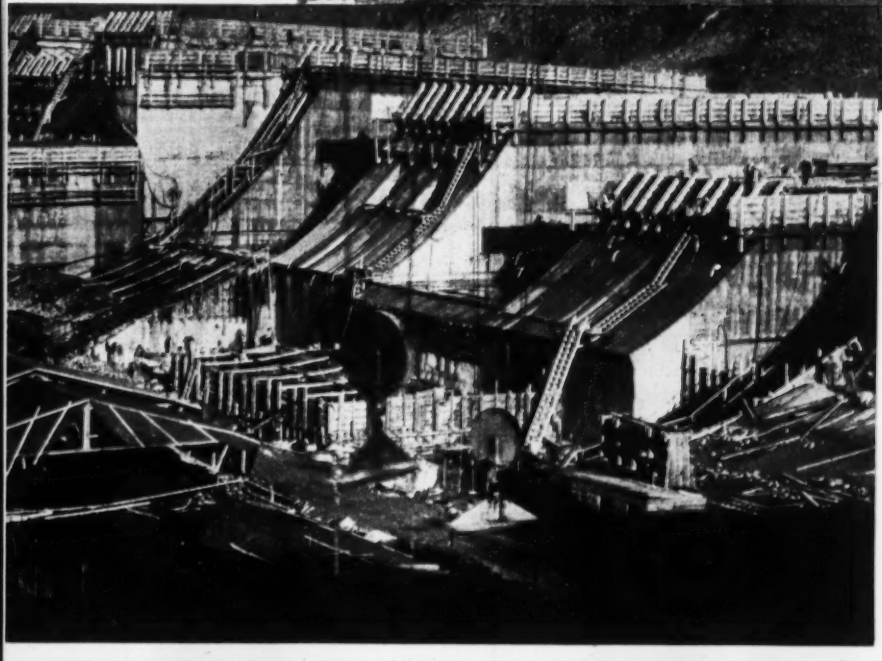

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READER COMMENT

Cautious loading

SIR: Without wishing to detract in the slightest from its marvels, the writer would observe that your picture in (ENR Apr. 16, 1953, p. 40) showing two heavily loaded logging trucks upon a prestressed concrete bridge, also reveals a certain amount of cautious restraint in the loading inasmuch as the forward trailer wheels of the lead truck are directly over one bent, the forward trailer wheels of the second truck are directly over the second bent, and the rear trailer wheels of the second truck are either over the far abutment or are off the bridge. All other loads come directly upon the spans.

HOMER M. HADLEY
Consulting Engineer,
Seattle, Wash.

Big sphere's designer

SIR: In your description of the 225-ft dia steel sphere near Schenectady (ENR April 9, p 32) you named the owner (Atomic Energy Commission), the owner's construction agent (General Electric Realty Co.), the contractors and the inspection agencies, but you did not mention the designer of the unprecedented structure and its bowl foundation. The project was designed by Chemical Plants Division of Blaw-Knox Co., Pittsburgh, Pa.

ROBERT M. DODDS
Pittsburgh, Pa.

Cause of pipe failures

SIR: Your editorial in the April 23 issue, p. 132, implies that Canadian engineers have endeavored to "squelch all publicity" in connection with the corrosion failure of prestressed wire on a large job in Canada (ENR Feb. 19, p. 47).

As one of the engineers concerned, I take exception to the implication of your remarks. The facts are that the corrosive mechanism involved is unique, and research is still not complete. Until definite facts were established, it was considered unwise to release theories as to cause which had yet to be proved.

Sufficient factual data were very recently completed to permit at least a partial report on the problem. On April 20, prior to your editorial, the undersigned presented a paper to the Conference on Prestressed Concrete at the Newark College of Engineering, Newark, N. J., in which the situation was outlined and an interim report

(*Continued on page 10*)

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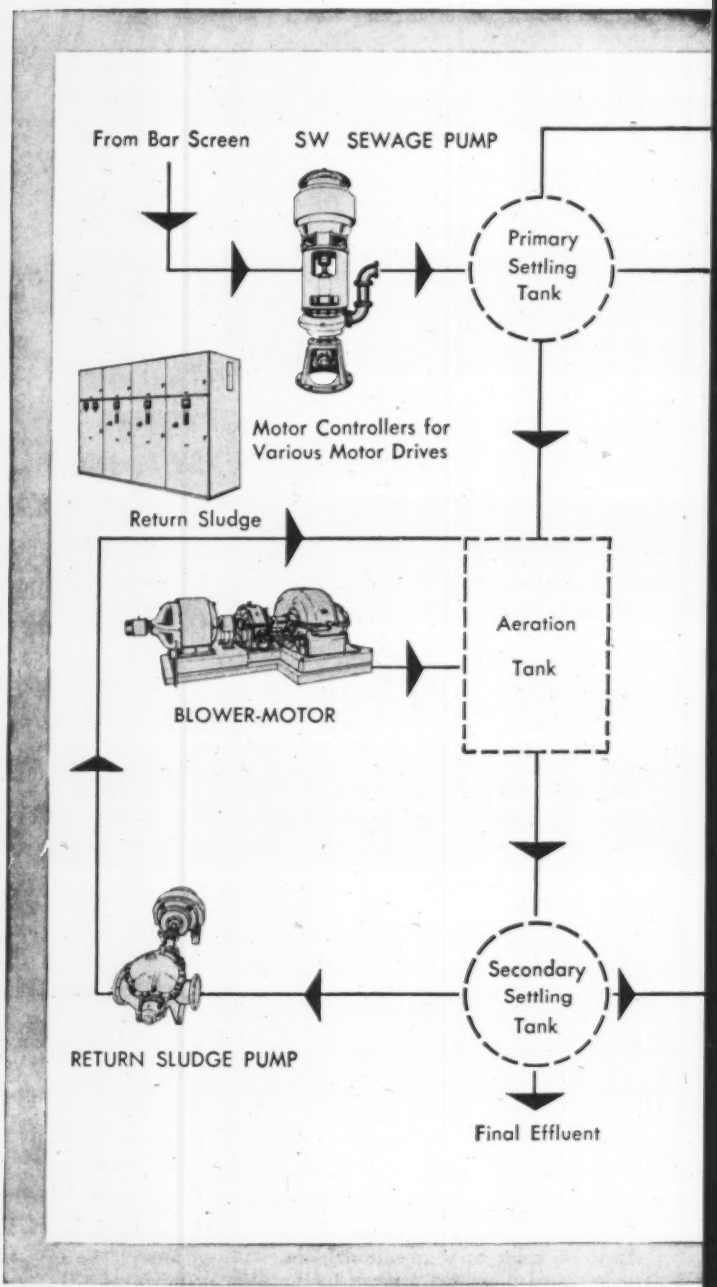
How to make Sewage



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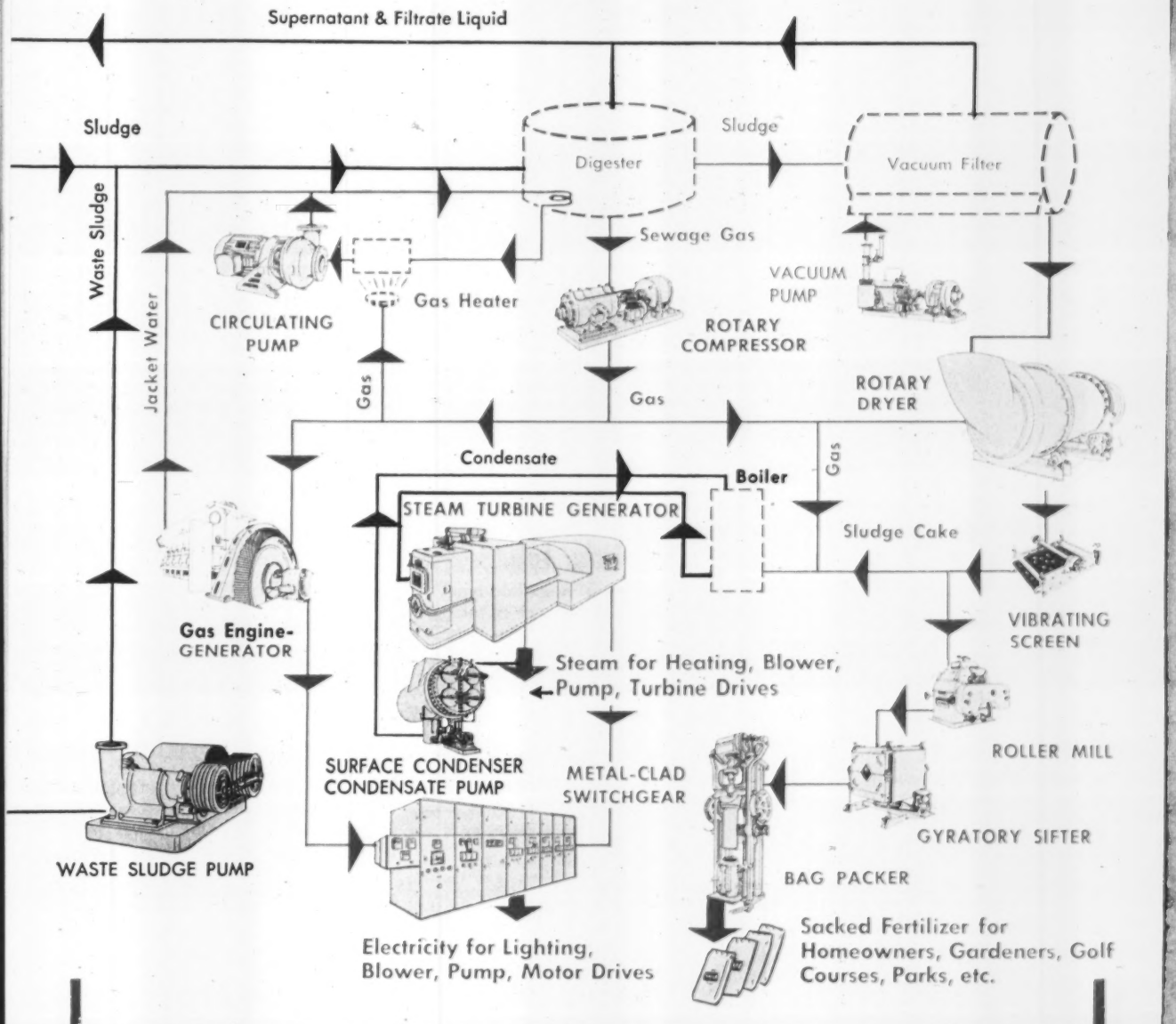

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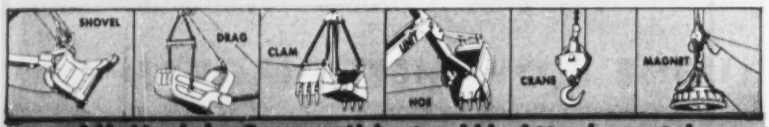

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READER COMMENT

from our principal consulting engineer was quoted.

As stated at this meeting, and contrary to your editorial, it is our intention to cover this whole problem fully in a complete, published technical report, but only when the full data are available. In the meantime, the statement released at Newark clearly summarizes the facts now known concerning the corrosive problem in question and disproves the suggestion that information is being withheld for fear of injuring reputations.

R. M. Doull, *General Manager*
The Preload Co. of Canada, Ltd.
Montreal, Que.

[Editor's Note—While the editorial in question did appear in ENR after the meeting of April 20 in Newark, the editorial had been written the previous week and was being printed at the time of the meeting.

Incomplete as information still is concerning what caused the destructive corrosion of the prestressing wire, we believe that less harm would have been done to the reputation of the manufacturing process had the best available information concerning the cements used and additives been given out immediately following discovery of the failures.]

Proposed Academy

Sir: With regard to your editorial in the March 5 issue and the letter, page 10 of the April 16 issue, relative to the proposed American Academy of Sanitary Engineers, it is apparent that one of the major problems regarding this controversy is the lack of an accepted definition of sanitary engineering.

The question of who is a sanitary engineer is of long standing, and the genesis of some of the belief that a need exists for a new professional group undoubtedly lies in the statements propounded in the February, 1950, issue of Civil Engineering, in which the flat statement was made that "while sanitary engineers may become involved in the fields of public health, environmental sanitation, and industrial hygiene, it does not follow that all who are engaged in those fields should be considered sanitary engineers." The opposite side of the coin was presented in the rebuttal to this article which appeared in the March, 1950, issue in the form of a letter to the editor signed by Abel Wolman, Herman Baity and others.

Unfortunately, the fact remains that there are two distinct schools of thought as to the scope of sanitary engineering. One group is of the opin-

(*Continued on page 14*)

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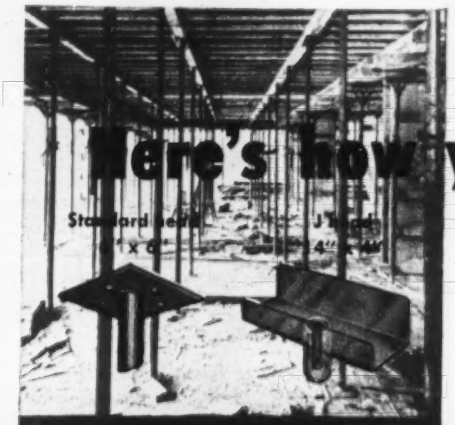

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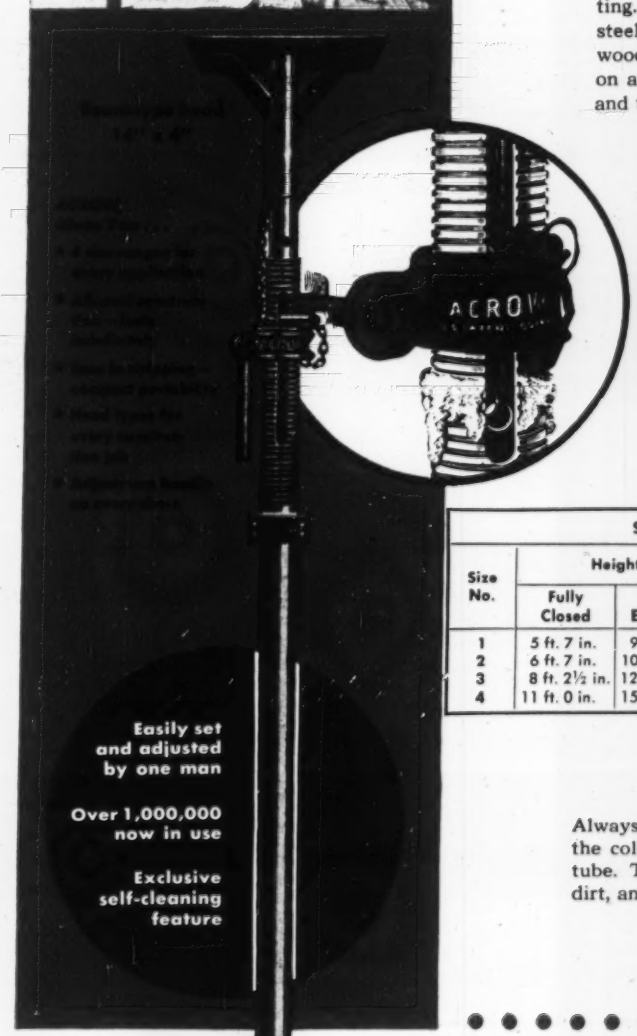

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READER COMMENT

ion that sanitary engineering is a branch of engineering concerned with the control of the human environment to the end that environmental stresses will be kept within acceptable limits to insure that health and human well-being will be maintained." At the other extreme there are those who believe that sanitary engineering is a sub-specialty of civil engineering concerned with the design, operation of structures and facilities for sanitary purposes such as water supply, sewerage, and waste disposal.

Although the published purpose of the Sanitary Engineering Division of the ASCE include cognizance of industrial health hazards and the provision of adequate sanitation in urban, rural and other areas, cursory review of the papers presented at the meetings of the division over the last five years and those published in CIVIL ENGINEERING shows a remarkable lack of activity in those areas.

Meanwhile, many sanitary engineers other than those with civil engineering background, are engaged in industrial hygiene and similar activities and are also concerned with their professional stature and development.

Regardless of whether or not the American Academy of Sanitary Engineers comes into being as a full-fledged organization, a very real challenge exists for the better development of the programs of the "founder societies." It is my own opinion that the proposed academy aims and those of ASCE are mutually compatible. Those who are members of the Academy, if it should come into full being, would also be active participants in the affairs of their parent technical societies as well as the APHA and the AIHA. Lastly, as is pointed out by Mr. Fry in his excellent letter (a major portion with which I concur wholeheartedly), this problem is not restricted to sanitary engineering alone.

ALVIN F. MEYER, JR.
Lt. Colonel, USAF (MSC)
Fairborn, Ohio

CALENDAR

American Society of Civil Engineers, spring meeting, Casablanca Hotel, Miami Beach, Fla., June 15-19.

American Institute of Architects, Metropolitan Theater, Seattle, Wash., June 16-19.

National Society of Professional Engineers, Sheraton Beach Hotel, Daytona Beach, Fla., June 18-20.

Conference on road and street traffic control, Purdue University, Lafayette, Ind., June 22-24.

American Society for Engineering Education, annual meeting, University of Florida, Gainesville, June 22-26.

Conference on modern highways, Massachusetts Institute of Technology, Cambridge, Mass., June 23-25.

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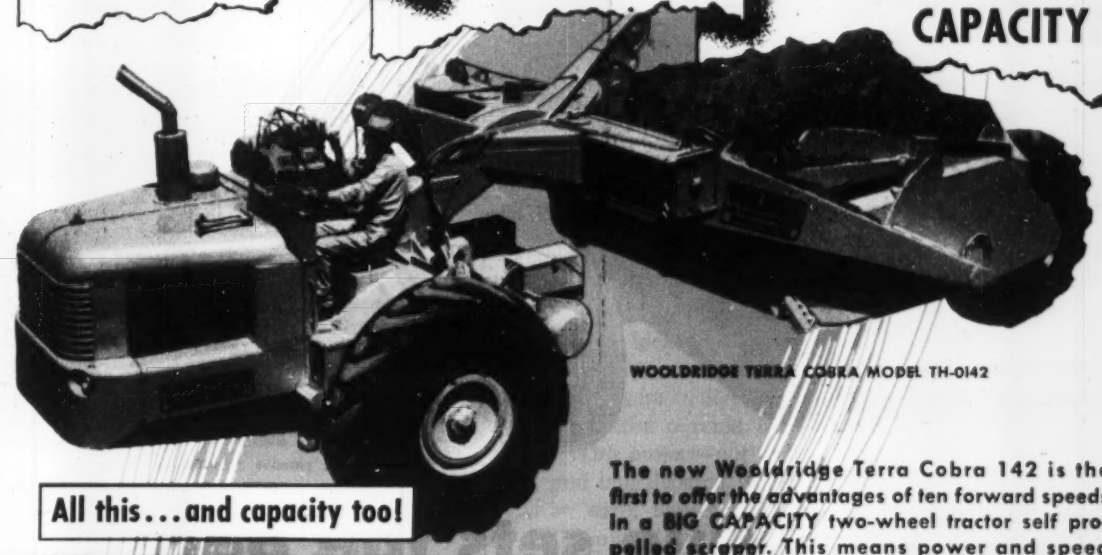

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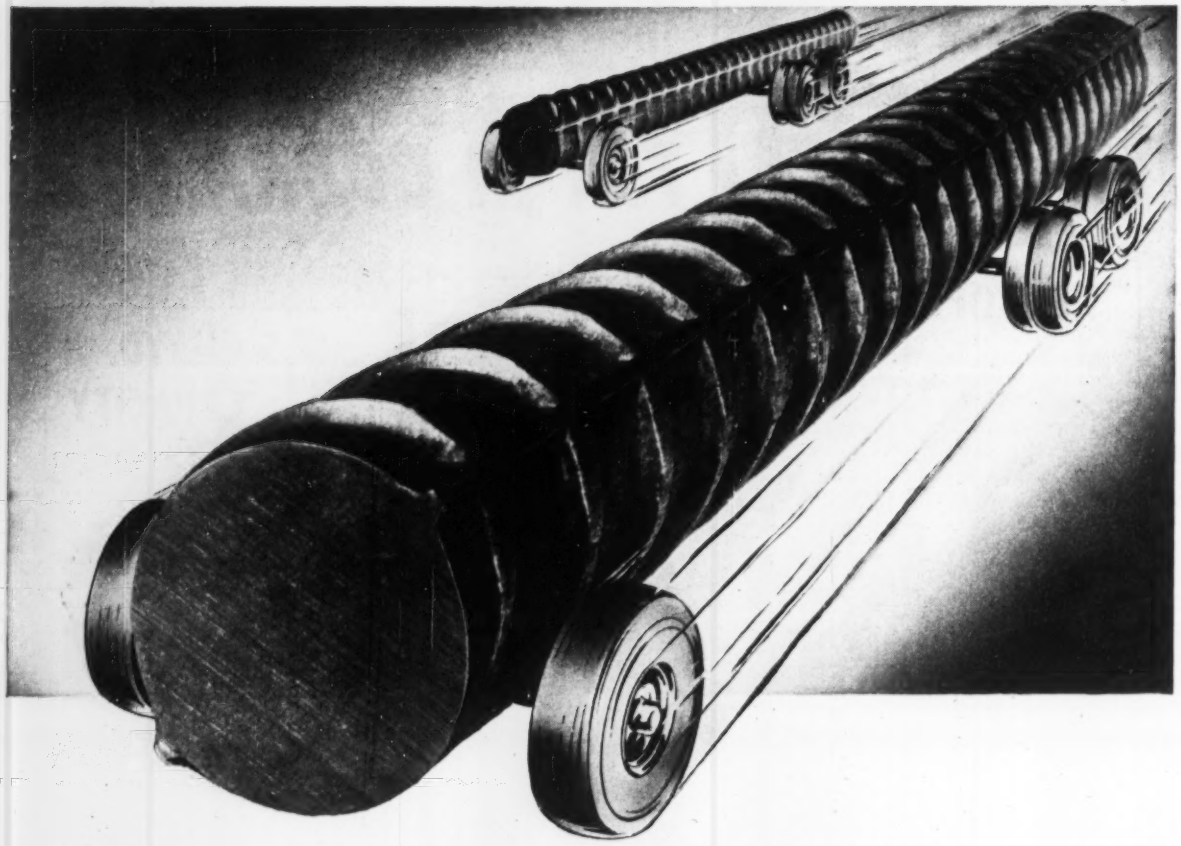

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THE CONSTRUCTION WEEK

CONTENTS

May 21, 1953 Vol. 150, No. 21

NATIONAL AFFAIRS

Federal construction projects suffer heavy cut 21
Kansas City flow-way plan defended at AWWA convention 23
New highway maintenance idea developed 25
Deep water platforms for bridge survey 25
New York State project for St. Lawrence power development favored 26
Interior starts cutting red tape 26

LABOR

Continuing strikes show wage pressures and resistance 28
Operating engineers' feuds are aired 31

FEATURES

Cable-stiffened suspension bridge updated 32
How wellpoints aided anchorage excavation 39
Reinforced concrete clear-water basin-built to be leak-proof 42
Perlite concrete roof cast on metal lath 45

MUNICIPAL

Planned community rises in Toronto 49
Boston's capital improvements scheme to use $60 million 52

BUSINESS PROFILE

Stone & Webster: from Edison to the atomic age .. 59

INTERNATIONAL

Tunnel excavated after it is built 65

RESEARCH

Roll roofing used as vapor barriers 68
On-grade floors 71

BUSINESS AND FINANCE

Contractors bid Lower California highway jobs 103
U. S. business—the big picture 103
Fannie Mae waits it out as mortgage market remains uncertain 104
Novel cost basis for water pipeline 104

NEW PRODUCTS

All-glass insulating window 120
New membrane materials use no organic fibers 120
Wood truss bridge has clear deck 120

Reader Comment 2
Calendar 14
Washington Observer. 19
Engineering News Pictures 46
Editorials 128
Men & Jobs 56
Obituaries 76
Books 79
Unit Prices 82
Construction Report .. 83

- **Slow pay on reactors**—Construction men, who read into that $1-million nuclear research grant by the Ford Motor Co. a sign that there's a lot of business for them right now in reactors for private owners, will have to be patient. Things won't move that fast.

  They'll have to wait, in fact, for an amendment to the Atomic Energy Act of 1946 that would permit private ownership of high-powered atomic reactors (ENR April 16, p. 156).

  What Ford did was give the $1 million to the University of Michigan to build a nuclear research reactor, which is a very-low-power apparatus, incapable of producing fissionable material, and useful for experimental purposes only. Such reactors are of little interest as a power source for industry, although their research value is great.

  Michigan plans to put its reactor into a three-story building with five-ft-thick concrete walls, with the apparatus itself in a 30,000-gal water tank that will act as a coolant, "window" for observation, and a radiation shield.

- **Barrier idea dormant again**—At least one of the many plans for constructing an earth barrier across part of San Francisco Bay was put to rest when the California legislature rejected enabling legislation.

  This project—not to be confused with the well-known and long-debated Reber plan—proposed construction of an earth barrier (for fresh water supplies for the San Joaquin Valley and parts of the bay region) through private financing. It would have given the private builders priority rights to fresh water conserved as a result of their project.

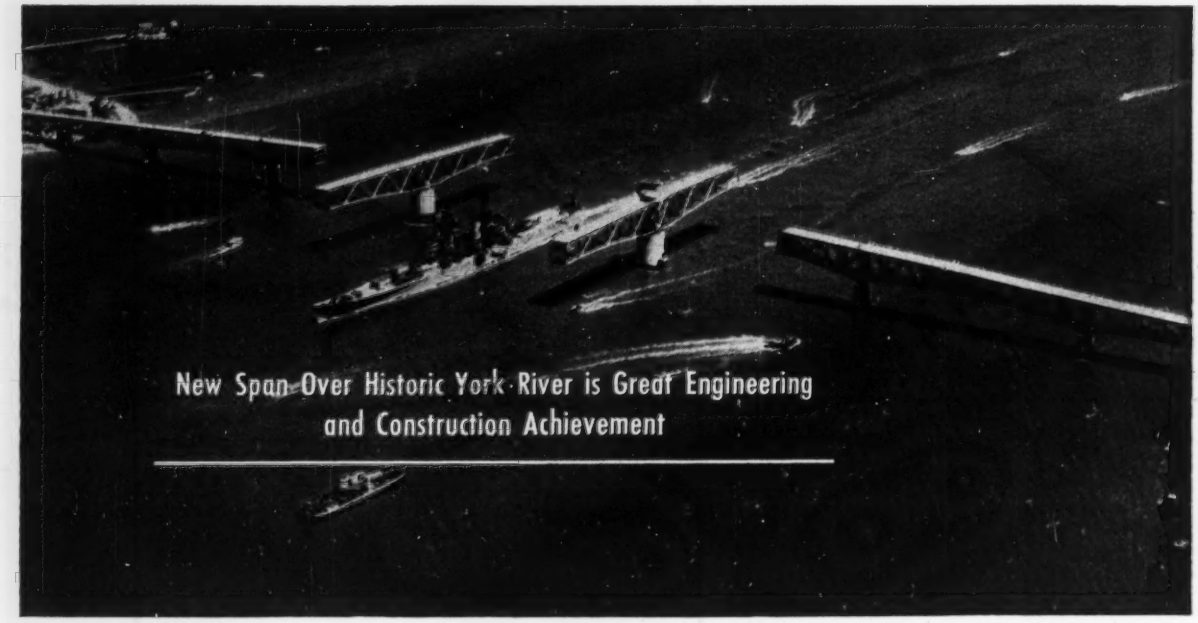
  Legislators turned the proposal down flatly, but indicated that they will approve a proposal backed by Gov. Earl Warren for a $250,000 study of all such barrier proposals and their effect on the heavy shipping traffic and salinity control (and fresh-water storage). There's also a probably expensive pollution control problem to be considered.

- **Pay hoped for**—Municipal officials who have been watching the running battle between the community of Cuyahoga Heights (Cleveland suburb) against construction of a $40-million aluminum plant (for Alcoa) had news this week:

  Cuyahoga Heights will grant the permit, on the chance that legislation now being prepared in Washington will go through to permit payment in lieu of taxes by such plants.

  The fight came to a head April 9, when local officials discovered that the Air Force had instructed Alcoa to go ahead with the plant, despite local objections. Officials stiffened their opposition, finally reached a truce when Alcoa agreed not to ask a building permit until the matter was resolved, in return for granting of permits for preliminary work.

Twin-Swing-Span Bridge



Latest Forward Step Linking Tidewater Virginia

● Newest traffic crossing to pull together water-separated areas of Tidewater Virginia is this $9-million Bridge over the York River.

Said to be the world's largest twin-swing-span structure, it is 3,750 ft. in length, with two 500-ft. swing spans. Cantilever over-water construction is supported on six giant caissons built at Newport News Shipbuilding & Dry Dock Co., and floated to bridge site.

Caissons, 95 to 110 ft. in height, were sunk approximately 70 ft. into river bed, with tops about 40 ft. under water. Towering 90-ft. pier shafts were built by means of cofferdams on top of the caissons.

The Bridge has a 26-ft. clear roadway, with two safety walks for pedestrians. A total of 50,000 cu. yds. of concrete was used in the piers and deck.

Construction of this great Bridge, in a broad, deep, swift-flowing river, ranks this as an achievement of high order, another monument to engineering and construction skills.

Into the bridge proper, approaches, toll plaza and administration building went a total of 99,796 barrels of Lone Star Cement, every barrel of it the always-dependable high quality that makes Lone Star a fitting material with which to translate engineering vision into economical, durable reality.

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Eisenhower's budget speech this week is an Administration landmark. It's an attempt to tie together the Administration's position on some of its knottiest issues: budget-balancing, military security, tax cuts, and economic prosperity.

Federal construction is right at the heart of budget-balancing (see also page 21). But it will be months before you'll be able to say just how hard and how soon the Eisenhower economy drive will really begin to take hold.

•

The President is developing all his policy positions slowly. His reluctance to jump in quickly and positively on a controversial issue jibes with another Eisenhower rule: cut Congress in to the maximum extent possible on almost everything.

A fall session of Congress is likely. So much still is to be done on appropriations that there will be little voting on other major and minor issues that the Administration has proposed. The schedule now shaping up: a recess in July after appropriations are voted, return in the fall.

•

Here's a rundown on controversial matters:

Defense Production Act: The Senate voted a standby law this week; The House now takes it up in order to get it to Eisenhower by June 30. It will permit continued government control of scarce materials, give some "freeze" powers.

Reorganization: Reshuffle of the Defense Department will be approved, to take effect in July. Biggest construction impact: giving authority to the Creedon office on a unified military building policy. Agriculture reorganization—putting Rural Electrification, Forest Service, and so forth under direct authority of the secretary—is in for a fight, and possible rejection.

The proposed Reclamation-Army Engineers merger is losing ground fast—the Administration sees too bitter a fight ahead.

Taxes: The Excess Profits Tax will be permitted to die June 30. Relief to individuals will be delayed, along with Eisenhower's proposals to make up the money lost by expiration of Excess Profits Tax. They will be taken up in any Fall session.

•

Bid shopping: Legislation regulating shopping for sub-bids on federal construction has congressional backing. Only problem is finding a time in the session-end log jam to put matter to a vote. A delay until this fall or next year is likely.

St. Lawrence Seaway: There's no chance of final action this session, although the Senate Foreign Relations Committee is ready to vote a thumping endorsement of federal-Canadian construction. The House is still against it.

Atomic law revision: Congress will delay consideration of opening up the McMahon Act to let industry have a hand in peacetime development (see also p. 17). The dispute over the Portsmouth, Ohio, plant must be scheduled before an overhaul is started. Hearings will be held this fall if there is a special session, but amendments won't come to a vote until next year.

•

Public power: McKay's withdrawal from Hell's Canyon has been muddied somewhat by Eisenhower at his press conference last week. He said in effect that he couldn't say whether the public or private plan would be adopted, but that he supposed he would eventually have to decide.

Hawaii-Alaska statehood: Southern opposition, and Southerners' strategy to link Alaska with Hawaii, will delay a vote on either proposal until next year at least. Hawaii still has a chance to be voted the 49th state.

Taft-Hartley revision: Time is running out, and enthusiasm is dimming for any major overhaul of the labor law. Sentiment in Congress is to toughen the law, giving an excuse to the Administration to delay a vote this session.

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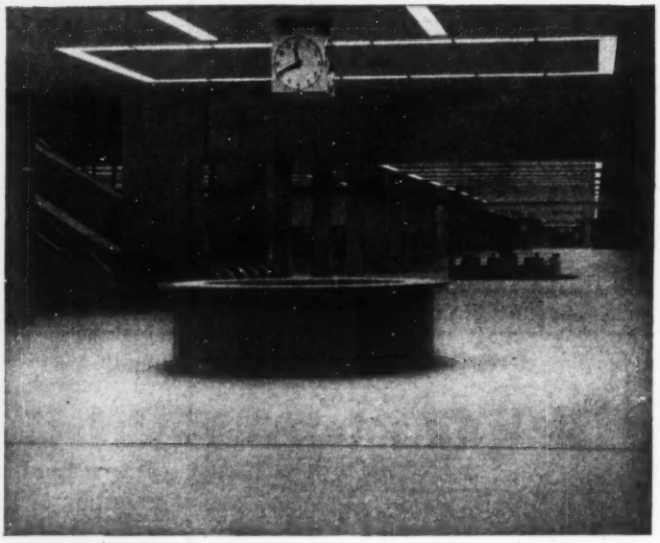

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Cuts in federal construction mounting

Air Force postponing work at 14 bases; Army and Navy revising programs; health and education projects cut

Air Force action last week in dropping from its present program $146 million of new work on 14 planned projects highlighted effects of budget cuts on federal construction.

Unsuccessful but not yet squelched was an effort by a congressional bloc to stop construction of the $1.2-billion uranium production plant at Portsmouth, Ohio. This fight seemed likely to go on all summer.

Construction was hard hit in the Health, Education and Welfare Appropriation Bill reported out by the House Appropriations Committee. The Administration asked a $61-million cut in TVA's budget.

• **Wing strength reduced**—Under its original program to build up to 143 wings by 1955, the Air Force had planned to spend $1.45 billion on construction projects in fiscal '54. With the Administration cut in overall Air Force spending for the year from $17.5 to $15.1 billion, plans were adjusted to provide for a strength of 120 wings. Accompanying this cut was the suggestion that construction expenditures for the year be clipped more than one-third to a new figure of $900 million.

This figure is not yet mandatory. Up to the first of this week, the Air Force had not received a directive from the Secretary of Defense that its construction spending for fiscal 1954 must be limited to $900 million. The Air Force apparently could still work out its own allocation of funds within the $15.1-billion ceiling. But the necessary adjustment in wing strength prompted the Air Force to delete from its present program certain projects that won't be needed until expansion goes beyond 120 wings.

• **List of projects dropped**—Biggest of the projects dropped was the $46-million strategic air base at Portsmouth-Newington, N. H. Other big jobs deleted, with the amount for each authorized by Congress, were: Selman Field, Monroe, La. $23.7 million; Drane Field, Lakeland, Fla. $19 million; Raleigh-Durham, N. C., Municipal Airport $19 million; Clinton-Sherman Air Base, Clinton, Okla. $13.5 million; Seymour-Johnson Field, Goldsboro, N. C. $9.7 million; Myrtle Beach, S. C., airport, $9.2 million.

Some of the other projects canceled for the present also have large authorizations. They include $6.2 million for Galveston, Tex., Municipal Airport; $3.9 million for Houma, La., Naval Air Station; $3.6 million for Charlotte County Airport, Punta Gorda, Fla., and $1.1 million for Godman, Ky., Air Force Base. No figure was given for Grenier Air Force Base, Manchester, N. H. Two others involving smaller sums were Palmdale-Los Angeles County Airport $380,000, and Major Field, Greenville, Tex., $23,000.

So far as is known, none of the deleted projects had been ruled nonessential by the Secretary of Defense in his review, under the construction freeze. Five of the larger ones had been announced as cleared: Portsmouth-Newington, Selman, Drane, Clinton-Sherman, and Houma.

Other cuts in planned projects may follow. That possibility will become stronger as hinted by defense officials, plane production shows signs of falling behind schedule for equipping 120 wings.

• **Army, Navy re-adjusting**—Meantime, the Army and Navy are reworking their military construction programs to show what could be done next year under the reduced spending schedules. The Army is going to allow more for its military construction than the $250 million suggested by Defense Secretary Charles E. Wilson, but the Navy is making up a fiscal 1954 program that will indicate how far it can go under the $280-million ceiling that Wilson proposed.

Original programs submitted in Truman's January budget called for the Army to spend more than $600 million and the Navy more than $475 million on construction in fiscal '54. These services now have outstanding obligations of about $300 million each, while the Air Force similarly is obligated under existing contracts on which payments in excess of $900 million will be coming due.

These outstanding obligations would appear to eat up all the construction money that Secretary Wil-

AEC no easy economy target

Members of the House Appropriations Committee apparently have been spearheading the drive to stop the Portsmouth atomic energy plant. Some time ago they reportedly asked the White House to issue a stop order, and got a flat "no" from the President.

Then, suddenly, the economizers got what looked like a big assist from the Department of Defense. Word leaked from Defense Secretary Wilson's office that the military might taper off its future requirements for atomic bomb materials to a level that would eliminate the need for Portsmouth.

The rumored change in military requirements set off its own chain reaction in Washington. Sen. John Bricker, Ohio Republican and a member of the Joint Committee on Atomic Energy, led a drive for an immediate investigation of the Defense Department requirements for atomic materials. In the face of this reaction, Secretary Wilson denied there had been any change in the military's atomic energy requirements.

Meanwhile, AEC also got into the act. The commission issued a terse statement to the effect that construction was going ahead on Portsmouth despite any rumors to the contrary.

The commission is in a fairly good strategic spot to make such a statement. Congress already has appropriated the bulk of the funds it will need to build Portsmouth and its other new production facilities. The only cutback that would save any substantial part of these funds would be a closedown of the Portsmouth project. Even AEC admits that it could save about $1 billion by a quick stop order there. In a few more months, however, major contracts for construction and equipment on the project will have been let.

The economizers in Congress obviously will continue to force a halt at Portsmouth, but this will meet strong opposition, particularly in the Senate. The issue won't be finally resolved until AEC appropriations get through Congress. Best bet now is that AEC will get a substantial budget cut—but not enough to stop Portsmouth.

son suggests should be spent in the next fiscal year, but Wilson refuses to worry about that. He contends that the military never carries out its construction work as rapidly as planned. His argument would be valid except for the fact that the services have built their construction programs up to a peak that was expected to last through fiscal '54. They are spending more than $2 billion this year.

• **Unfreezing well advanced**—There has been no stoppage of Navy jobs that were more than 20% complete on Feb. 10. These contracts will go through to completion, with few minor modifications. So far, the same thing is true of Air Force and Army work that is under construction.

Of construction work not yet awarded, Navy submitted about $200 million in planned projects for which the Budget Bureau had apportioned funds. The Secretary has released all of this except $22 million. Some of the amount held out may be cleared later; a portion of it may be reprogrammed for other sites or other purposes than originally planned. That kind of reshuffling is going forward for $15 million of the money released.

For all three of the services, the Secretary of Defense was asked to review more than $4 billion. Latest information indicates Army and Air Force programs have been cleared with only small percentages knocked out or held back.

• **Hospital construction cut**—A good part of the $88-million reduction in the requested appropriations for Health, Education and Welfare was in construction funds. The chief casualty was $25 million in grants to states for hospital construction.

The bill includes $50 million for hospital construction and Subcommittee Chairman Fred Busbey pointed out in justification of the reduction that as of Feb. 28, this year, $172 million already appropriated hadn't been spent. No funds were recommended for this year, although Congress voted $185 million last year for schools.

• **TVA cut $61 million**—Last week, the Administration sent to Congress a revised budget for the Tennessee Valley Authority that reduced the agency's request for construction funds by $61 million, all of it for power. Largest item knocked out was $30 million for two units of a new steam-electric plant near Memphis.

Earlier action by the Administration had cut $180 million from the Army Engineers request for civil works, $90 million from the Bureau of Reclamation, and $30 million from federal aid to civil airports. On Reclamation, the House Appropriations Committe and the House itself cut more deeply than the Budget Bureau.

The Senate will restore some of the cuts made by the House and carryover funds of the agencies will permit them to spend a little more on construction in fiscal 1954 then the appropriated sums might indicate, but federal construction faces a leaner year than observers predicted last January.

Contractors, however, have made no protest. Most of them favored economy in government.

Flood control 'pilot plant' funds asked

Provision for $5 million to launch a "pilot plant program for flood control through watershed treatment" was included in the Department of Agriculture Appropriation Bill that went to the House this week.

Funds recommended by the House committee handling the appropriation bill would permit work to start at 50 locations considered as "pilot plant" areas. Total limit on federal expenditures at all 50 projects is $29 million, with ceiling of $3 million on each project. The bulk of the $5 million in this year's bill would go for surveys and research to get the program started.

The agricultural bill also provided $13,546,000 for forest roads and trails.

One of the few new projects likely to be authorized by Congress this year is the Santa Maria irrigation project in California. The Interior Committee of the House has approved the bill calling for $16.9 million for the construction of an irrigation dam on the Cuyama River a few miles upstream from Santa Maria. There are no power features and no canals involved. The irrigation relies on underground water replenishment.

The Solano irrigation project has been cleared by Congress and last week Interior Secretary Douglas McKay advertised for bids to start construction on the project in Solano County north of San Francisco. An appropriation of $3 million voted by Congress last year to start the project for a determination of whether or not the project was to be a part of the Central Valley Project. Hearings held in the area by a Senate Subcommittee showed that local senitment was against making it a part of the Central Valley Project, but a House Interior Committee, which threatened to tie up the project on jurisdictional grounds, finally relented and freed the project for construction.

Ohio turnpike

Cement monopoly charge made in brief filed by asphalt interests

Richard H. Shafer, spokesman for Ohio asphalt interests, charged in a brief filed with the State Supreme Court last week that Portland cement is controlled by a monopoly and that there would be no price competition "among the nine companies who have made commitments to furnish cement" for the $326-million Ohio Turnpike project.

In urging the tribunal to uphold an Appellate Court decision requiring bidding on both bituminous concrete and Portland cement (ENR April 2, p. 21), Shafer contended that the Ohio Turnpike Commission could not legally select a particular kind of paving in advance of bidding. He said the Ohio Turnpike Act "requires that bids . . . be taken on all competitive materials equally suitable for the purpose and the commission has not and does not propose to take such bids."

Earlier in the week further support of the asphalt interests' case came in a brief by Robert N. Gorman, Cincinnati attorney and former justice of the State Supreme Court. In his brief, Judge Gorman, counsel for several contractors engaged on public works projects, held that the requirement for competitive bidding set forth in the Turnpike Act "is not only to obtain economical work, but to protect the public from collusive contracts and to prevent favoritism, fraud, extravagance and improvidence."

Private housing starts

Private housing starts picked up sharply in April—totaling 106,500 or 10% higher than for the same month in '52. April starts boosted the total for the first four months to 333,900, a 3%-gain over the same 1952 period.

However, public housing starts are off 27% for the first four months, when 21,100 units went under construction. April starts—numbering 3,500—were the lowest for the year so far and were 62% under the figure for April 1952.

Both private and public starts had been lagging in the first quarter of this year (ENR May 14, p. 21). In March, for example, total housing starts were 7% behind the first quarter of last year.

Because of the spurt in private housing starts in April, the combined figure for the first four months reached 356,100 units. This is 1% ahead of last year's first four-month period, about the same as in '51 but 14% under the '50 record.

Kansas River flow-way plan defended by its drafters at AWWA convention

Waterworks delegates discuss cost burden of road improvements, micro-straining, and plastic pipe

Arthur J. Fox, Jr.
Associate Editor

The American Water Works Assn. diverted its attention to a purely flood control question for what was probably the most significant discussion of its 73rd annual convention in Grand Rapids, Mich., last week. The Kansas River flow-way plan was defended and objections to it answered.

N. T. Veatch of Black & Veatch, Kansas City, hit high spots in the $200-million levee-and-channelization scheme proposed to Gov. Edward F. Arn of Kansas as preferable to the $850-million plan of federal agencies for reservoir control of Kansas Basin waters. He was backed up by Louis Howson of Alvord, Burdick & Howson, Chicago, who with Abel Wolman of Johns Hopkins University made up a board of three consultants for the Kansas River study (ENR March 5, p. 21).

Answering objections of the Corps of Engineers to the flow-way plan (ENR April 23, p. 26), Veatch denied that damaging velocities would result from the proposed works. He said velocities in the peak 512,000-cfs discharge at Kansas City in the catastrophic 1951 flood reached 14.6 and 17.8 fps at points within the city; higher levees and a wider channel (1,500 ft instead of 750 ft) would carry the 1951 flow at velocities more on the order of 3 to 10 fps.

• Other cities need flow-ways—Veatch admitted the control-without-retention scheme for the Kansas won't cut flood flows to be imposed upon the Missouri and, farther downstream, on the Mississippi.

He said that cities from Kansas City to St. Louis simply would have to provide the same sort of flow-ways.

Pointing out that the Army's 34 or 36 planned reservoirs, if built, would have cut but 225,000 cfs from the flow at Kansas City in 1951, Veatch declared this would have shaved it to within 35,000 second-feet of the size of the 1903 flood.

Dredging and maintenance would be costly on the proposed flow-ways past cities but maintenance would be cheaper than operation of the basin-wide reservoir plan of the federal agencies. Veatch contended. In fact, he expressed the opinion that operation of such a far-flung system of reservoirs anywhere near the theoretical plan is "humanly impossible."

• Claims flood damage offset—Flow-ways past cities would provide no protection for rural areas, but Veatch and his two associates maintain that the average $6-million annual flood damage to rural areas of the farming state is more than offset by improved fertility in the land due to floods.

If the cities, where 76% of the damage was done in 1951, can be protected for $200 million worth of flow-ways, it is uneconomic to spend the extra $650 million envisaged in federal reservoir plans to protect acreage at a cost per acre exceeding the land's value, Veatch argued. The reservoirs planned would flood or take out of use 450,000 acres, half as much land as was inundated in the 1951 disaster, he adds.

What Veatch and his associates propose in effect is a return to levees, as proposed by the Army Engineers up to 1936. While levees at that time were planned for a flood of 1903 magnitude (260,000 cfs at K. C.), they now propose levees and channels to hold a 1951 flood (512,000 cfs) with a reasonable factor of safety. It is realized that local participation in the cost of needed levees would be more than could be conveniently afforded by individual municipalities. But they suggest conservancy district organization (such as on Ohio's Miami River) could lead to a financing solution.

(Tuttle Creek Reservoir, key unit in the Army's flood control plan for the Kansas Basin was without an appropriation last week. And with the Kansas state legislature in the closing days of its session it appeared unlikely the consultants' report would result in any immediate local action.)

N. T. VEATCH scores federal program on reservoir control of Kansas Basin floods.

• Highway cost burden cited—Serious thought was given at the waterworks convention to the problem of costs imposed by highway improvements. The trouble is that in more places than not, water users subsidize highway users by paying the cost of water utility relocation caused by road construction.

To the water company or department this spending is serious, sometimes running into major portions of its gross annual earnings. To the highway financiers, claim the waterworks men, it is a much less significant item of cost (generally under 5 % of a highway improvement) and therefore, highway departments should assume their pro rata share of the cost in more instances than they do.

The Federal-Aid Highway Act now allows no funds for non-railroad utility location. Secretary Harry E. Jordan told the AWWA membership that a bill now in congressional committee would remedy this inequity. The bill had a set-back last year when it was claimed that highway plans would need to be cut 30% if highway departments picked up the tab for all utility relocations they cause. Evidence being collected and sought by AWWA would indicate this percentage was grossly exaggerated, and it is actually less than 5%.

• Micro-straining discussed—Micro-straining is expected by its British proponent, P. L. Boucher of Glenfield & Kennedy, London, to show more effective results with production of their newest wire mesh. It has 23-micron spaces (135,000 apertures per sq in.) instead of the 35-micron openings of cloth now in use in England. Boucher said he feels the new mesh will remove, or at least reduce, flocs as well as the algae, which the present cloths can catch. He also cited low installation and operating costs.

Richard Hazen of Hazen & Sawyer, New York, who visited micro-straining installations in England last summer, presented operating data from several plants. Arthur W. Consoer of Consoer, Townsend & Associates, Chicago, another visitor to England last summer, stressed the serious nature of algae problems in many water supplies and indicated he felt the micro-strainer held possibilities for these.

A. A. Kalinske of the Infilco Co., former exclusive licensees to sell micro-strainers in the U. S. told about the effect of the micro-strainer in his firm's pilot plant operations in Chicago, in Wisconsin and at Baltimore's

Back River sewage works (where effluent is cleaned up for use as industrial water by Bethlehem Steel [ENR May 1, 1952, p. 66]). But despite its ability to reduce turbidity 20% to 50% and plankton 85%, Kalinske comes to the "only realistic conclusion" that the micro-strainer is not too promising even in industry.

• **Users report on plastic pipe**—On plastic pipe, users from Los Angeles and the American Water Works Service Co. told of their experience and compared notes on tastes and odors with W. D. Tiedeman of the National Sanitation Foundation at the University of Michigan. Tiedeman reported tastes so far detected may come more from jointing materials than from the pipe itself.

The AWW Service Co. spokesman reported no trouble with tastes or odors and said plastic service lines would be extended into 1,200 installations in all 111 services of its parent company.

Reporting on water conservation efforts used by industry, Herbert E. Hudson of the Illinois State Water Survey, quoted from the Paley report that by 1975 215,000,000,000 gal daily would be used by industry instead of the 80,000,000,000 gal daily used now; 62% of all water used would be by industry, opposed to 43% now.

In its studies of water use in industry, a committee headed by Hudson has defined consumptive use as that discharging water to the atmosphere or incorporating it into a product. It also proposes that terminology be standardized on such terms as multiple use, recycling, control techniques and substitution.

Engineers are retained by N. Y. transit authority

New York City's newly formed Transit Authority has retained two New York engineering firms—Coverdale & Colpitts and Day & Zimmerman—to bring up to date previous engineering reports on the city's transportation system. The firms had originally prepared the studies as part of a general management study for the city. The work is to be completed by July 1.

The authority made the announcement last week as one of its first moves toward untangling the transit system's financial woes (ENR April 23, p. 56).

Heading the group is Maj. Gen. Hugh J. Casey, CE (Ret.) who left his place as chief of the Ohio River Division, U. S. Engineers, in January, 1950. Casey has since been an executive with a major distillery.

State highway officials urge raising federal aid to full gas tax income

State highway officials last week told the House Subcommittee on Roads that the government should step up federal aid to the level of its gasoline tax receipts—so long as it stays in the motor fuel taxation field—and that it should maintain and continue the activities of the Bureau of Public Roads unimpaired.

Six spokesmen for the American Assn. of State Highway Officials testified before the committee. Charles M. Ziegler, AASHO president and Michigan highway commissioner, led off with a prepared statement that laid the groundwork for the association's position.

AASHO has several times gone on record in suggesting that the federal government get out of the field of motor fuel taxation and leave this tax source to the states, Ziegler told the roads subcommittee. Historically, gasoline taxes have been the states' chief source of revenue to build highways and streets, he emphasized.

But when Congress decides to continue the gasoline tax, as it did the higher rate of 2 cents a gallon starting last November, the AASHO believes that it should increase federal aid for highways to an amount not less than the central government's revenues from that source, Ziegler said. The association so declared by resolution at its last annual meeting, he recalled.

All six witnesses told the committee that we are losing ground in the fight to bring highways up to present traffic needs. Ziegler's statement stressed the fact that $32 billion of capital improvements are required to correct deficiencies in the 664,000 miles of our federal-aid system, which carries more than 80% of all rural traffic. To put those highways in shape during a period of 15 years, the committee was told, we should be investing $3.5 billion a year in betterment, as compared with only $1.5 million actually being put into improvement of federal-aid and state highway systems.

Most critical among all highways are the 38,000 miles of the interstate system—the main national network—carrying 20% of all traffic, the witnesses pointed out. They reiterated the AASHO request that annual federal aid of $210 million be set aside for the interstate system, divided among the states on the basis of population, but with no state getting less than ¾ of 1% of the total federal funds earmarked. Some 35,000 miles of this national network are below tolerable standards, they declared.

AASHO stands, as always, against federal participation in maintenance and repair costs, the witnesses said. On toll roads, the association still has formulated no policy, members told the committee, but it is continuing to study the economics of the toll highway problem.

Witnesses for the AASHO who followed Ziegler last week were B. D. Tallamy, New York State Superintendent of Public Works, and four state highway engineers, A. E. Johnson of Arkansas, R. A. Harris of Mississippi, R. H. Bladock of Oregon and D. C. Greer of Texas.

Ohio seeks $50 million in new road revenues

The lower house of the Ohio legislature last week adopted measures designed to increase annual revenue for highways by more than $50 million.

Revenue sources tapped were: 1. A weight-distance axle tax to yield $19.6 million annually; 2. One-cent gas tax increase for $22.5 million; 3. Re-enactment of legislation hiking truck registration fees about 33% to raise about $8 million.

The House also sent to the upper chamber legislation giving political subdivisions the state's present 23% share of income from motor vehicle licenses, amounting to about $11.5 million annually.

It was voted to authorize the state highway director to employ outside engineers to prepare plans for highway projects involving outlays of $1 million or more.

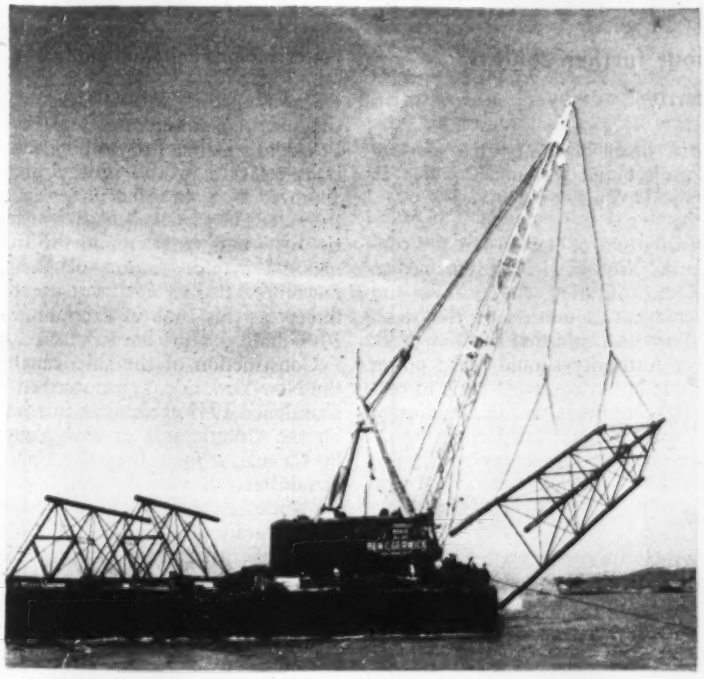
Experimental barriers built on turnpike

The Pennsylvania Turnpike Commission has begun experimenting with various types of median barriers, following recommendations by a state legislative committee which recently completed a study of safety measures for the 327-mi toll superhighway (ENR April 16, p. 24).

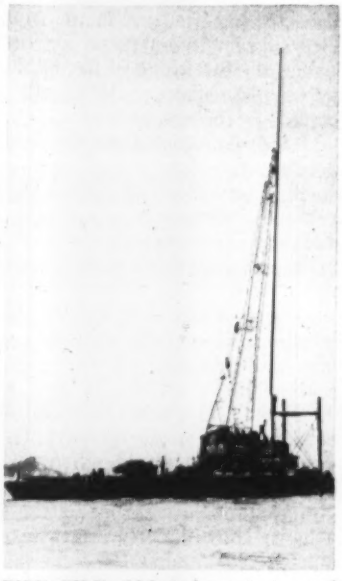
Barriers consisting of double-plate guard rails are being erected at three sections. At one near Allegheny tunnel, evergreen trees from six to eight feet high are being planted midway in the center strip, which has been given a bituminous surface.

Throughout the plateau area of the turnpike, which has a high accident rate, the commission is experimenting with a double white line as a means of guiding motorists away from the median strip.

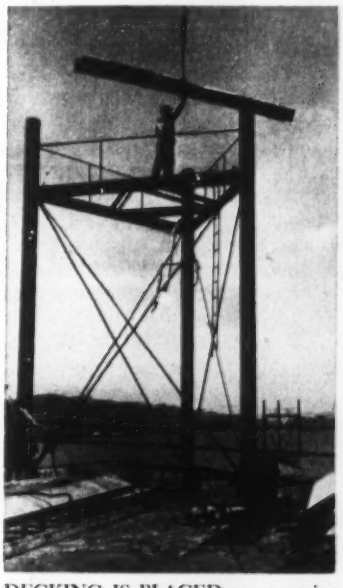
Deep water platforms for bridge survey



BARGE-MOUNTED DERRICK swings triangular-shaped survey platform section into position as part of first work on the Richmond-San Rafael Bridge across the north arm of San Francisco Bay. Substructure contractors have 24 such platforms to use for the more than 60 deep water bridge piers. Work is being done by Ben C. Gerwick, Inc., and Peter Kiewit Sons Co. under a $14-million contract.



PIPE PILE, 125 ft long, is inserted in leg of survey platform. Triangular section is lashed to securely anchored barge while 10-in. dia piles are placed through the 12-in. dia tower legs. Tower extends down to the mud line with piles penetrating deep into the mud to hold tower in place. Cross bolts hold platform to piles.



DECKING IS PLACED on surveying platform as final step in building tower that will be used to align one of the bridge piers. Note other survey platform and hills of Richmond, Calif., in background. Work is designed and directed by Bay Toll Crossings Division of California Department of Public Works for the California Toll Bridge Authority.

New highway maintenance plan developed in Idaho

A new highway maintenance procedure has been established in Idaho to speed repairs on the state's 4,700 miles of roadways.

The state highway system has been divided into about 200 patrol sections. One man is given the sole duty of maintaining each of the sections, which range from 15 to 40 miles in length.

The new plan replaces an arrangement under which an entire crew worked together as a unit, covering many miles from each of the state's 90 maintenance sheds. Under the old system a week or more was often required before the crew got to a section of highway where chuck holes, slides and other hazards had developed.

Roscoe C. Rich, state highway board chairman, said the new system will eliminate such delay and allow the maintenance man assigned to the shorter section to cover his section every day and make repairs immediately.

North Carolina appoints new road commission

North Carolina highway divisions have been increased from 10 to 14 with a commensurate increase in the membership of the state highway commission under a reorganization act adopted at the recent session of the state legislature (ENR May 14, p. 26).

At the same time, Gov. William B. Umstead appointed a completely new commission. He placed in the chairmanship A. H. Graham of Hillsboro, who served in that post from 1945 to 1949.

Graham returns to his old post after the busiest four-year period in the commission's history, during which a $200-million bond issue has brought black top and crushed stone to hundreds of miles of once alternately muddy and dusty country roads.

Licensing law ruling

Arizona's attorney general has advised that a city cannot exempt by ordinance the provisions of the state contractor's licensing law. He informed Rufus Spoon, state registrar of contractors that: "It is evident that the law was meant to pertain to contractors within a municipality as well as throughout the entire area of the state. Therefore, the section on licensing would operate within a city despite an ordinance which might not be as restrictive as the state law."

N. Y. State plan for St. Lawrence power development favored by FPC examiner

License approval expected without further contest; Administration expediting action on seaway

Another chapter in the long-drawn controversy over construction of the St. Lawrence Seaway was written in Washington last week when a Federal Power Commission examiner ordered issuance of a 50-year license to the Power Authority of the State of New York for construction of hydroelectric features of the project on the U. S. side of the border. Across the border, the Hydro-Electric Power Commission of Ontario already has been authorized to undertake similar work.

The license ordered issued to New York State requires that work must start within a year and be completed within seven years. In its own planning, Ontario Hydro expects to have the first of its share of St. Lawrence power on the line by June, 1958.

Each country will get 940,500 kw of power. Cost of the work on the New York side is estimated at $267 million. Financing costs and interest during construction will bring this to $316 million.

• **Position reversed**—FPC Examiner Glen R. Law's finding is a spectacular reversal of the position he took back in 1949. At that time, on a similar application from New York State, he held that the license should not be granted as he believed that both the power and navigation facilities should be built by the federal government.

That decision was appealed by the New York Power Authority, but the appeal was withdrawn last June on a joint request from the power authority and the FPC.

• **Finding not final**—Examiner Law's decision is subject to review by the commission, on its own motion or on an appeal by parties to the proceedings, which must be filed within 20 days. If no review is initiated, the order becomes final after 30 days.

No unfavorable action within the commission is expected, and as all opponents were heard in detail by examiner Law, it does not appear probable that the commission will order a review to give them more time to talk.

Delaying action also is possible in the Court of Appeals but does not appear probable. The only other applicant for a license for the same project was the Public Power and Water Corp., of Trenton, N. J., a private venture, which Examiner Law found could show no evidence of substantial financial ability to undertake the project and was unacceptable to Ontario Hydro as a partner.

• **Distribution of power**—On the controversial issue of giving preference to rural electrification cooperatives and power agencies outside of the state, examiner Law held that the New York Power Authority should make power available on an equitable basis to out-of-state consumers within a radius of 300 mi. Where satisfactory agreements cannot be reached with distributors in other states, the FPC will settle the arguments.

• **Power for aluminum**—Within a year, the Power Authority must report to the FPC on the feasibility of maintaining a supply of water to the Massena, N. Y. plant of the Aluminum Company of America during construction of the new power facilities. Company now diverts water from the St. Lawrence to the Grasse River to generate power for making aluminum.

• **Seaway plans progress**—Meanwhile, the special committee set up in the President's Cabinet to deal with questions relating to the seaway project approved U. S. entering the project to the extent of participating in construction of a new canal around the International Rapids section of the St. Lawrence. It does not favor spending money at this time in extending the 27-ft draft channel beyond Lake Erie.

Construction of the ship canal on the New York side, as proposed in the abandoned 1941 agreement, instead of on the Ontario side as now planned by Canada, is favored by the Cabinet committee.

Prior to announcement of the Cabinet committee's findings, President Eisenhower met with Canadian Prime Minister St. Laurent to discuss the Seaway project and later issued a statement in favor of joint construction.

Interior Department starts to cut red tape

Interior Secretary Douglas McKay last week made his first major move to simplify department organization and straighten lines of command as recommended by Undersecretary Ralph A. Tudor.

McKay wiped out five divisions in his office that had slowed administrative operations. Abolished by his order were the program staff and the Divisions of Water and Power, Land Utilization, Minerals and Fuels, and International Activities.

Bureau chiefs and assistant secretaries now can work out overlapping problems by direct personal conference. Up to now, if two groups like Reclamation and the Fish and Wildlife Service had a problem on a Reclamation dam, the two bureau chiefs passed the difficulty to the Water and Power Division and the program staff for settlement. Assistant secretaries responsible for the various bureaus were similarly hampered in getting decisions.

Even more important, the former divisions were interpreting department policy. They had assumed much of the responsibility that normally rests on bureau chiefs and assistant secretaries. That responsibility now is returned to those officials. A direct chain of command runs from the Secretary and undersecretary to each assistant secretary and his bureau chiefs.

To help these officials on their tougher problems, McKay set up a purely advisory group in his office, called the Technical Review Staff. This unit is to be exactly what its name implies. It will give help when requested but won't make any studies until asked. International activities, such as the furnishing of technical experts to foreign countries, will be handled by the new staff.

McKay also shook down the department's seven field committees and closed their offices. Full-time chairmen and staffs for the committees are abolished. Field representatives of Interior bureaus will carry on the committee work in each of the major river basin areas where a group has been operating. One of the field men will serve as chairman.

All told, about 150 jobs have been eliminated. The new Technical Review Staff will retain perhaps 25 of the people who would otherwise be fired.

Preparatory to reorganizing the bureaus, McKay directed the assistant secretaries to arrange for a review of organization and operations in each bureau. McKay and Tudor plan to name three non-government men to study and recommend major organization changes.

In other parts of his reorganization last week, McKay said he aims to put all public information activities of the bureaus under a central office and all legal activities under the solicitor of the Interior Department.

Government reviews engineer shortage

Utilization of professionals in managerial posts and as technicians cited by manpower commission

A report made by the National Manpower Commission shows that the demand for engineers is dependent upon continuing high levels of private investment in business.

In general, the NMC told President Eisenhower in a report to him, that progress is retarded and national security weakened by failure to provide proper education and training for a "vast reservoir of highly intelligent young people."

Warning that "scientists and professional people cannot be stockpiled like commodities against future shortages," the council examined in detail the problems of providing sufficient engineers, physicists, teachers and doctors.

The study is entitled "A Policy for Scientific and Professional Manpower" (Columbia University Press).

Here are some of the findings in the engineering field:

- The current demand is for men to perform a wide variety of functions from top management down to routine testing. (Industry's increasing preference for engineers for managerial functions accounts for some of the shortage of engineers.) Thus, shortages of both sub-professional technicians, (draftsmen, survey party men, etc.) and of competent administrators have increased the demand for engineers. Although it is estimated that industry can use from 3 to 5 technicians for each engineer it employs, the number of engineers who graduate from college each year is far greater than the number of technicians who graduate from recognized technical schools.
- Since Korea there has been a widespread shortage of engineers caused by increased defense expenditures, coupled with a reduced supply of new graduates. The shortage has been intensified by efforts of employers to stockpile engineers against future shortages.
- The demand for engineers is subject to wide variations with changing business conditions. Although defense expenditures probably will level off soon, continued high levels of private investment mean that, barring a severe recession, the total demand for engineers will continue strong.
- Although industry needs executives with a technical background, executive employment may not make full use of the engineer's training. If liberal arts and business colleges were to include some measure of technical training in their curricula, industry could have a large additional source of supply to draw upon to fill management and sales positions.

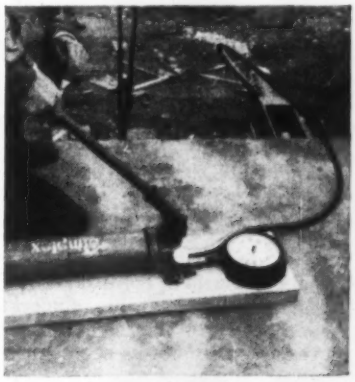
An interesting thesis involving the future of engineers was advanced in the study's chapter on physicists. The study reported that there is now a shortage of physicists with all levels of training to assist in translating new scientific developments into the field of engineering. This shortage, the report says, can best be relieved by providing additional mathematical and scientific training for engineers.

Toll road study

The Wisconsin legislature has created a five-man toll road authority, which is directed to study the feasibility of constructing a cross-state highway linking Illinois and Minnesota and paralleling Highway 12. The authority is empowered to build the project by private financing if the survey proves its need. Estimated cost of the proposed toll road is $170 million.

Prestressed waffle-slab roof lifted

UP IT GOES—First prestressed concrete waffle slab to be erected by the lift-slab method is one of two used to roof a one-story garage in Louisville, Ky. Providing an area of 4,500 and 3,700 sq ft, respectively, with an estimated weight of 100 psf, the slabs were cast on the ground floor over square plastic pans, which gave the undersides a waffle-like appearance (ENR April 16, p. 39). They were lifted 11½ ft by hydraulic jacks on top of the building's 10-in. dia steel pipe columns. Cost of the slabs in place is about $2 per sq ft.



PRESTRESSING was applied with a hydraulic jack (left) while the slab was on the ground. Prestressing wires (right) have double-headed ends—one to be gripped by the jack, one for anchoring. Plastic wrapping prevents bond with concrete. The garage was designed by Prestressing, Inc., of San Antonio, Tex. Dalhem Construction Co. is general contractor, and Ohio Prestress Co. of Cleveland, the prestressing subcontractor.

Union-management strife continues

Many contractor groups resist wage demands by crafts as strikes are called in effort to force settlements

The current crop of wage demands by AFL union craftsmen seeking new contracts has resulted in a wave of scattered strikes. The settlements so far negotiated indicate that construction employers are determined to resist high wage increases.

In one locality a union settled for no increase at all. But in most, the craftsmen got some raise or fringe benefits. Rarely has the union got all its demands.

Here is a typical example of the stormy side of union-management negotiation:

Early last week the AFL carpenters (representing about 14,000 Detroit carpenters) struck two construction groups which were members of the Builders Assn. of Metropolitan Detroit.

The association retaliated by asking all its members to "temporarily lay off" all carpenters.

The carpenters' union quickly called the action a lockout.

Not all the member unions responded. Some firms signed with the carpenters and put them back to work. Most carpenters are still laid off.

The carpenters had started out by demanding a 26-cent-an-hour package increase—wages, insurance and vacations. They're down to a 17-cent package now—12 cents for wages and 5 cents for health and welfare benefits. Current hourly rate: $2.93.

Striking AFL painters, meanwhile, had halted many important projects. The plasterers, too, were involved in scattered, but not blanket stoppages.

• **Delaware strike**—The strike of the Wilmington Building and Trades Construction Council in the Wilmington, Del., area, which began two weeks ago has halted construction on plants scheduled for vital defense materials production.

The strike of the 3,000 AFL construction workers for higher wages and welfare benefits has now spread from the Wilmington area to the rest of Delaware, bringing to a halt many public, private and industrial building projects.

• **Counter trend in Washington, D.C.**—AFL bricklayers' union locals representing 2,000 members employed by Washington contractors have agreed to a new one-year contract without a wage increase.

The $3.30 hourly rate and 3% employer contribution to a welfare fund were continued for another year.

This is the first time that these locals have renewed their contract without a wage increase since World War II.

• **Strikes end**—Granting of a 10-cent hourly wage increase brought an end to a two-week-long strike of southern Idaho carpenters . . . Some 4,000 eastern Virginia carpenters returned to their jobs last week while their wage representatives still worked with contractors in an effort to arrive at a contract . . . In Charleston, W. Va., 1,000 carpenters went back to work after getting a 17-cent hourly hike.

Homebuilders ask NLRB to force union to bargain

The San Diego Building Contractors Assn., Inc., has filed a complaint with the regional National Labor Relations Board office in Los Angeles charging Joe Cambiano, of San Mateo, Calif., international representative of the Brotherhood of Carpenters & Joiners of America (AFL), with refusal to bargain.

The reverse twist complaint comes about as a result of the two-year struggle of homebuilding general contractors in San Diego, Calif., for autonomy.

The San Diego BCA for 10 years had been a chapter of the California Building Contractors Assn., Inc., a Southern California organization of homebuilding contractors. The California BCA and the Los Angeles and San Diego chapters of the Associated General Contractors for several years have jointly negotiated with the basic AFL building trades unions under a 12-county agreement for Southern California.

Two years ago the San Diego BCA voted to disaffiliate from the California BCA. It affiliated directly with the National Assn. of Home Builders. It contended that it was thus a separate bargaining agency, but until this year it went along by a verbal agreement to abide by the 12-county negotiations although it did not participate in them.

This year Charles A. Taylor, executive vice-president of the San Diego BCA and T. J. Lords, a contractor and chairman of San Diego BCA negotiators, obtained recognition from the San Diego Building Trades Council represented by Walter Debrunner, president and business representative. Negotiations are now proceeding with this group.

The carpenters, however, disaffiliated from the Building Trades Council two years ago and do not negotiate with the other groups. Further, the carpenters refused to negotiate with the San Diego BCA.

California court rules welfare fund voluntary

A significant decision on union negotiated health and welfare plans has been given by Federal District Court Judge Dal M. Lemmon in Sacramento, Calif.

Judge Lemmon ruled workers of the McCloud River Lumber Co., of McCloud, Calif., have the right to decide individually whether they will participate in the plan.

And if they don't, the ruling provides, the workers are entitled to whatever amount was negotiated as a wage increase.

The case was decided following trial of a suit brought by the International Woodworkers of America, CIO.

The welfare plan was negotiated as part of the union contract in 1950. In the suit the union was trying to force the company to deduct the 7½ cents an hour from the checks of all employees.

The company in turn cited the agreement which requires written authorization from each employee, contending those who do not wish to participate should be paid the 7½ cents an hour as a straight wage raise.

Judge Lemmon's ruling grants the company declaratory judgment and dismisses a temporary restraining order preventing the company from paying the disputed 7½ cents an hour to the dissenting workers. The money had been held by the company for the employees pending final disposition of the case.

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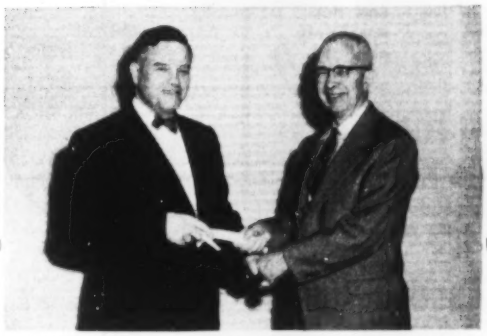
of the Concrete Reinforcing Steel Institute to

RAYMOND C. REESE



Raymond C. Reese (left) receiving the 1953 Concrete Reinforcing Steel Institute Award from Prof. H. J. Gilkey, Chairman of the Award Committee, at the C.R.S.I. 29th Annual Meeting at Pinehurst, N. C.

Raymond C. Reese, prominent structural engineer, receives the 1953 C.R.S.I. Award for his contributions to reinforced concrete construction through design. He was cited, in particular, for his authorship of the "C.R.S.I. Design Handbook," a unique book that eliminates time-consuming calculations by providing complete design data on reinforced concrete members.

Mr. Reese, a graduate of Massachusetts Institute of Technology, is also well-known as co-author with Professor Hale Sutherland, in 1939, of "Introduction to Reinforced Concrete Design"—a work widely used as a textbook.

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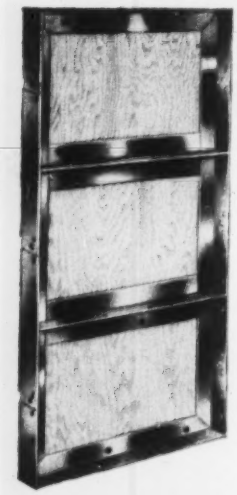

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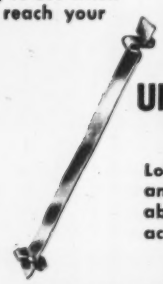

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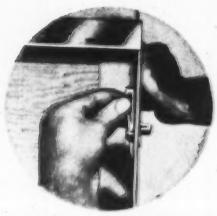

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Operating engineers' feuds are aired

Congressional committees hear charges of dictatorship by insurgent group of union men from Kentucky

A hot internal dispute in the operating engineers' union at the strike-plagued atomic energy project at Paducah, Ky., flared again last week as Senate and House Labor committees wound up hearings on Taft-Hartley amendments.

William E. Maloney, president of the AFL international union, was up before the committees in response to charges by a group of union members that he was a "dictator."

The charges ranged from job-selling by the Paducah local and unduly high dues and assessments—to beating or forcing the dismissal of workers who questioned union action.

Republicans and Democrats alike were unanimous in raking Maloney over the coals, placing full responsibility for the local on him and demanding prompt action to clear up the situation.

After two days of table-pounding and talk, Maloney promised the House Labor Committee that he would order an election to see if the local wanted to throw off the 11-year-old direct supervision by the international. The promise was given with the proviso that 25% of the members must ask for the election.

• **Dispute**—The disagreement involves the Evansville, Ill., Engineers Local 181. The local's jurisdiction takes in all power equipment jobs on the Paducah project.

Kentucky attorney John C. Lovett appeared before the Senate and House committee on behalf of a group called "Operating Engineers of Kentucky for Local Autonomy." He claims support of about 900 men, most of whom he says are members of Local 181.

This group has been trying to get a charter of its own from Maloney, but he has refused to accept registered letters containing their requests.

• **Supervision**—Maloney took over the local in 1942 because, as he put it, union money and money of the business agent "couldn't be separated."

Since that time, no elections have been held in the local. All financial matters and internal affairs are handled by an international union supervisor, appointed by Maloney. The supervisor names the local's business agents.

The Lovett group is in court with two suits directed against Local 181 and Maloney. One is testing whether the international is complying with a Kentucky law, which requires a union having 100 or more members in the state, to have a local there. A lower court ruling that Local 181 meets the requirement has been appealed.

Besides this, a $2.5-million damage suit against the local and its officers for fraud, injury, libel and misrepresentation is pending in McCracken County Court. The local already has been fined for contempt of court in that suit (ENR March 26, p. 30).

To complicate matters further, an independent group of 1,400 "loyal 181 members" has filed intervening suits to cut off the litigation begun by the Lovett group.

Specifically, Lovett charges that hiring and firing of men is dominated by the operating engineers through relationships between members of the union and officers of the F. H. McGraw Co.—prime contractors on the Paducah project.

Lovett gave the committee a statement by a man who claimed to have paid a McGraw foreman $25 for a job.

• **McGraw Co.**—In a special review of the whole Lovett-Maloney fight given to the Atomic Energy Commission the McGraw Co. said it could not investigate the matter since it did not know the identity of the foreman involved.

Maloney incorporated the 10-page company report in his own statement. It generally backs up Maloney's point-by-point refutation of the Lovett charges involving the company.

Maloney has been president of the engineers since 1942. In answer to questions by the House committee, he said he does not relish taking locals under international supervision. Recently, though he took over the engineers' local in Philadelphia and another bitter fight and court action is on there (ENR April 16, p. 32).

Maloney defended his supervision of the Paducah local. He said that if anybody who belonged to his union was selling jobs to anybody: "He won't be in our organization by night time."

No more trouble

Congressman Price said last week that he could see no reason for further congressional investigation of the Paducah situation since complaints made by John C. Lovett, Kentucky attorney, and others were based on incidents which occurred many months ago. The congressman said that harmonious labor relations have prevailed on the AEC job for six to eight months and that F. H. McGraw Co. has reported virtually no labor trouble since last August.

Labor Secretary warns against government props

Labor and management have been urged by Secretary of Labor Martin P. Durkin to keep the government out of their collective bargaining. Durkin also opposed compulsory arbitration of labor disputes.

"The government hasn't got the answer to your problems, and if you insist on the government's doing the job, you may find you're injured rather than helped," the former president of the AFL plumbers and steamfitters said at a luncheon of the Washington, D. C., Building Congress honoring 37 Dutch builders who have been visiting this country.

Although opposing compulsory arbitration of labor disputes, Durkin suggested the use of "voluntary" arbitration, where both sides agree to accept the decision of a panel.

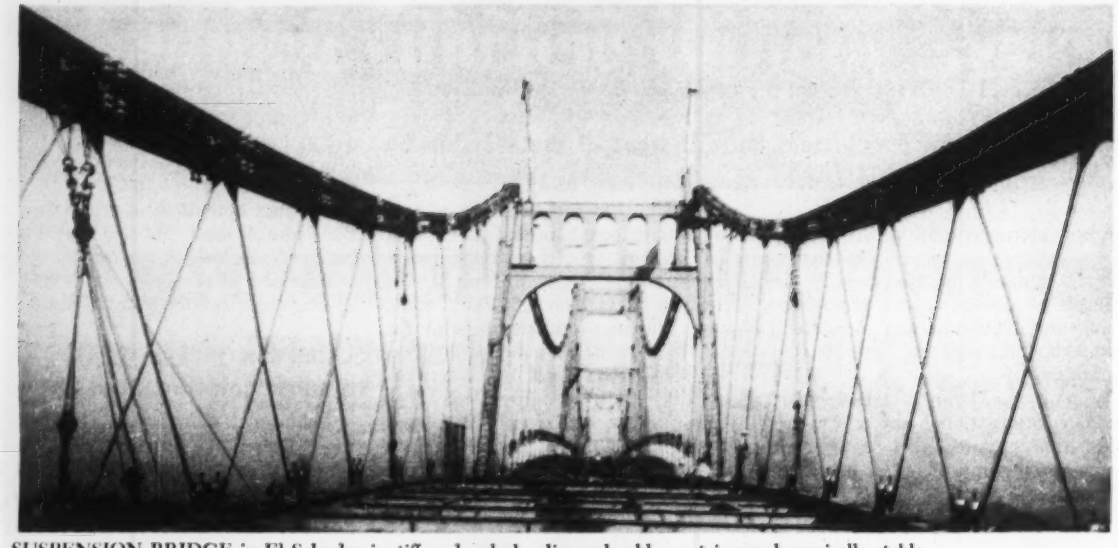
Durkin's talk at the Mayflower Hotel was one of the few he has made in which he has discussed labor-management problems publicly.

Strikes end . . .

• **Portsmouth, Ohio**—The construction workers and contractors in the Portsmouth, Ohio, area recently signed a new contract ending a 27-day strike which had halted all major building. The pact provides boosts ranging from 20 to 30 cents an hour.

• **Utica, N. Y.**—A 41-week strike of union plumbers in Utica, N. Y., ended when both sides signed a "letter of intent" to sign a one-year contract. The new contract will mean a wage increase of 34 cents-an-hour, but no change in working conditions.

• **A-plant settlement**—The strike of 6,000 to 8,000 AFL building craftsmen against the Maxon Construction Co. which stalled construction at the Oak Ridge, Tenn., A-plant since May 1, has been settled. It took three days of around-the-clock negotiations to reach the agreement, which union leaders recommended to the union membership.



SUSPENSION BRIDGE in El Salvador is stiffened only by diagonal cables, yet is aerodynamically stable.

Cable-stiffened suspension bridge updated

Blair Birdsall
Chief Engineer, Bridge Division
John A. Roebling's Sons Corp.
Trenton, N. J.

Completion of the five suspended spans of the San Marcos-Lempa Bridge in the Republic of El Salvador, Central America, marks the beginning of a new stage in the development of suspension bridges. Stiffening trusses or stiffening girders have been eliminated entirely from these spans, which have a total length of 2,209 ft. The stiffness of the superstructure is derived entirely from steel cables.

Under dead load, the structure acts like a suspension bridge. Carrying live load, it behaves like a continuous truss.

• **A paradox**—When a model of the five-span cable-stiffened bridge is loaded at the center, the end towers move outward—which appears strange indeed to engineers familiar with the action of suspension bridges.

In the continuous truss, each main cable performs the function of an upper chord. Cables parallel to the deck serve as lower chords. All suspenders are diagonal, rather than vertical, and form the web members of the truss.

Under dead load, the main cables and diagonals carry tensile stresses. When compressive forces are exerted on these tension members by live loads or wind, they merely reduce the dead-load tensile stresses.

Lower-chord cables were prestressed; when compressive forces are applied, they merely reduce the prestress.

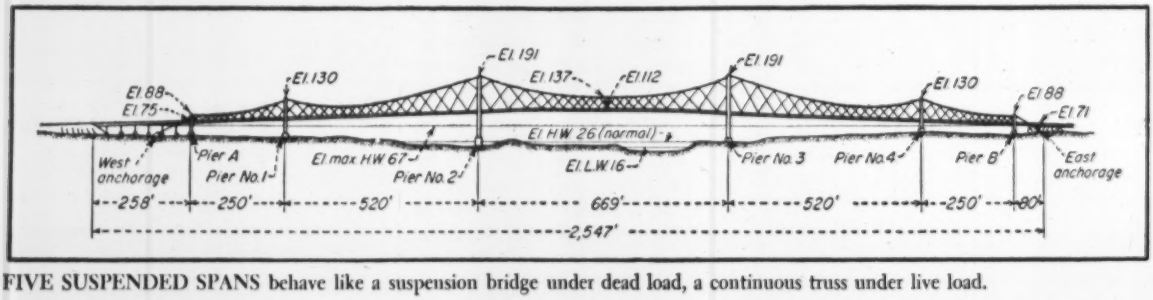
• **Prestressed deck**—Another novel feature of the design is the anchorage of the prestressed lower-chord cables in the concrete floor of the bridge (see sketch on page 36). With provision made to permit the floor to slide on the suspended steel, the deck, in effect, is a prestressed slab 2,160 ft long.

• **Concept is old, yet new**—This design represents an economical means, derived from the science of prestressed structures, of providing stability against aerodynamic forces and of incorporating sufficient stiffness for multispan suspension bridges. A useful byproduct is that it requires less critical materials to secure a given degree of stiffness than a structure stiffened by conventional means.

The scheme is so old that it appears new to the present generation. John A. Roebling used this basic approach when he installed diagonal stays on his bridges. Idea with the same general philosophy can be found in the files of the Patent Office of 60 years ago.

Renewed interest in the idea followed the collapse of the first Tacoma Narrows Bridge. Studies were made concurrently by the late Prof. George Maney of Northwestern University, by Modjeski & Masters (ENR Oct. 23, 1941, p. 97) and by the Roebling Corporation. D. B. Steinman used the principle to stabilize the Deer Isle Suspension Bridge, and Matthews and Kenan are now employing it for many of their pipeline suspension bridges.

This latest design is the culmination of a series of developmental steps by the Roebling Corporation. After being tried out on a small interoffice footbridge, the cable-stiffened bridge principle was the subject of a design study for the Corps of Engineers during World War II. Next, a five-span footbridge was built to replace an old



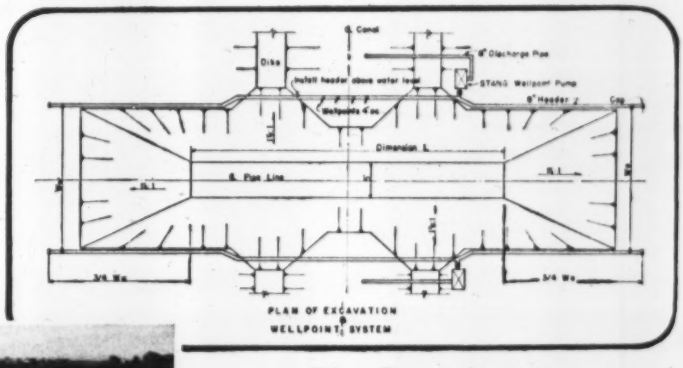
FIVE SUSPENDED SPANS behave like a suspension bridge under dead load, a continuous truss under live load.

BEATING a DEADLINE

Contractor used *Stang* service and Stang know-how

In connection with the installation of a 30 inch gas pipe line at Blythe, California, it was necessary to install crossings under the Palo Verde Irrigation Canal System at nine separate locations.

The Installation



The Specification

Time allowed for the entire operation was the month of December, 1952. Allowable time out of operation per crossing was 72 hours. Fully saturated fine silt predominated throughout the area. The non-consolidating nature of the material made it impractical to excavate and properly compact backfill without dewatering.

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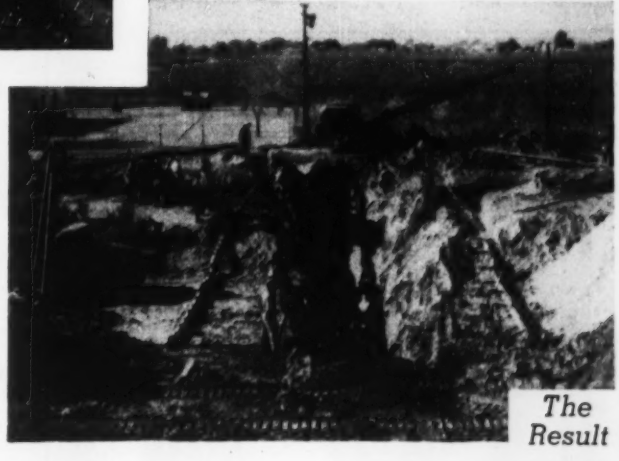

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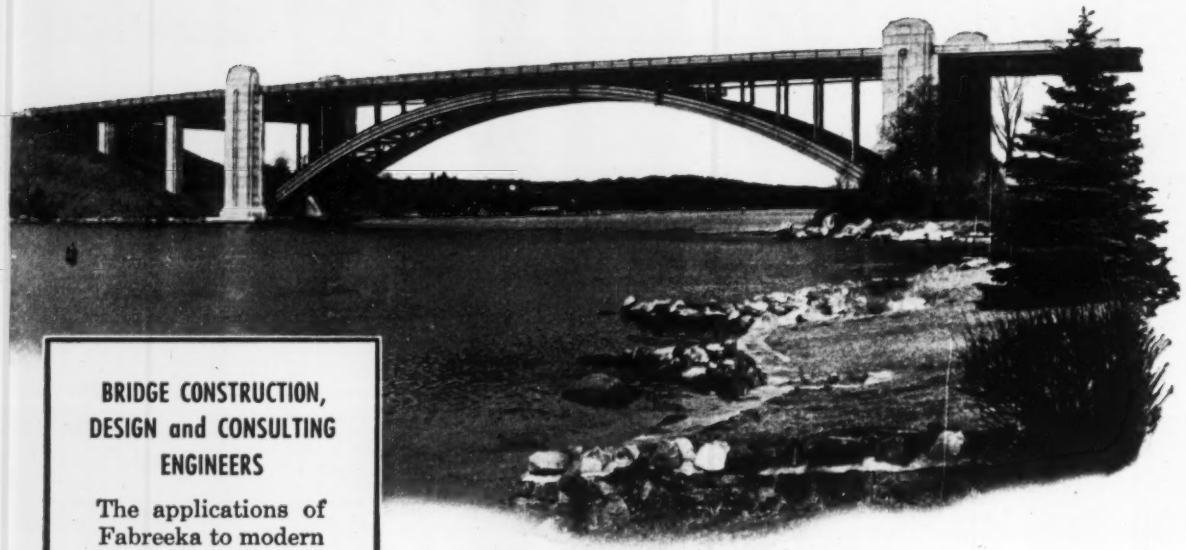

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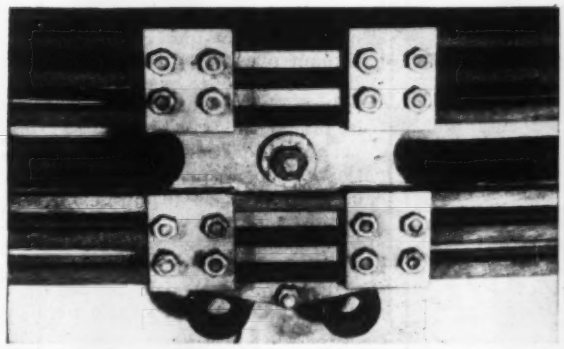
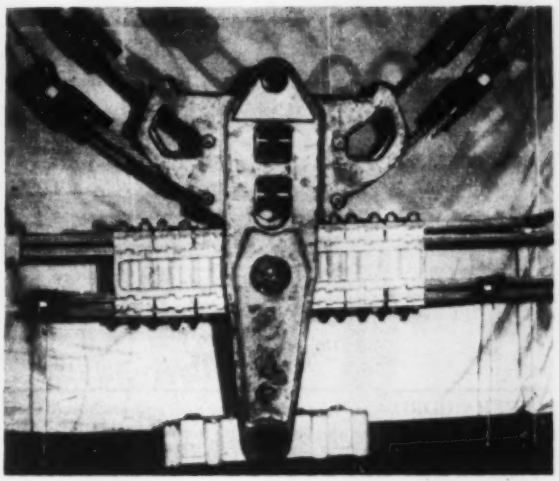


MAIN-CABLE BAND connects the 24 main-cable strands (in four groups of six each) and the diagonals.



CLAMP for lower chord also has saddle for diagonals and link girder between lower chord and steel.

covered bridge across the Delaware River at Lumberville, Pa. (ENR Feb. 26, 1948, vol. p. 319).

The main features of the superstructure design were conceived and developed by the late C. C. Sunderland, former chief engineer of the Bridge Division. The El Salvador bridge is a memorial to his vision and genius.

• **Superstructure design**—Built to carry highway traffic across the Lempa River about 50 miles from San Salvador, the capital, the new bridge carries the roadway at a high level because of the danger of heavy flash floods. Of the five suspended spans composing it, the longest is 669 ft.

Each of the two main cables consists of twenty-four 1½-in. dia galvanized bridge strands. Two additional strands added to the backstay portion of each main cable hold the end towers upright.

Diagonal cables extend from the main cables to the lower-chord cables, then back to the main cables. Depending on load requirements, the diagonals generally consist of one or two 1¾-in. dia galvanized bridge ropes.

Each of the two lower-chord cables is made up of eight 1¾-in. dia galvanized bridge strands.

At intersections of main cables and diagonals, a steel connector clamps the 24 main-cable strands in four groups of six each. Not only does this provide a good structural connection, but it also improves the appearance of the bridge, emphasizing the sturdiness of the cables. Incidentally, it also spreads the cable out sufficiently to provide a convenient platform for the workmen.

A connector at each lower intersection point serves three purposes—(1) lower-chord cable clamp, (2) inverted saddle for the diagonals, and (3) link between the lower-chord cable and a steel girder. The saddle was introduced to minimize the number of pin connections in the system.

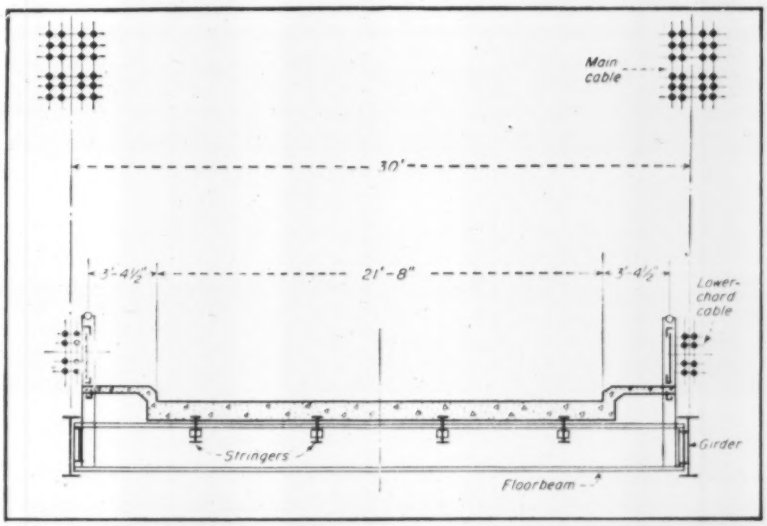
Cable clamps for both main and lower-chord cables were designed to permit the use of a multiplicity of small identical forgings. These provided smooth grooves with flared ends for the strands, at low cost.

• **Cable truss prestressed**—Stresses and deflections due to live loads and temperature were determined with electric strain gages from a model built to a scale of 1:20. Studies indicated that if the cable truss were permitted to have zero bending moment at dead load, some diagonals would appear slack under live load. Though this was not objectionable from a structural viewpoint, a decision was made to prevent it.

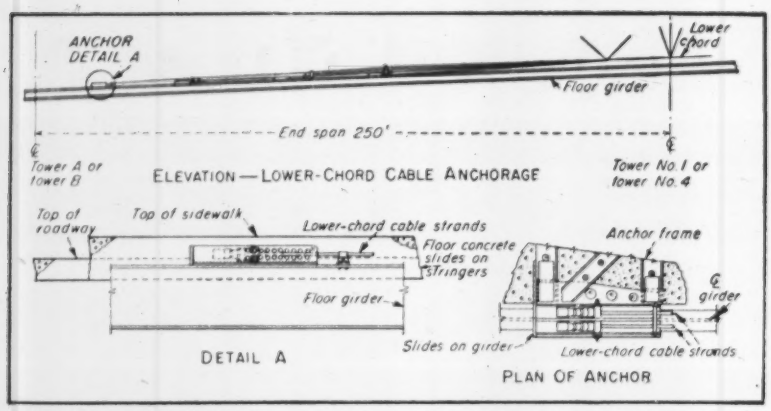
During erection, therefore, bending moments were induced in the bridge at dead load in the opposite sense to that produced by live load. This was accomplished by adjusting the diagonal system to a condition of zero bending moment under dead load plus one-third live load. On removal of this live load, the desired reverse bending moment existed in the truss at dead load. This illustrates what can be done with a cable-truss system if the designer disapproves slack diagonals.

Steel edge girders made of 36-in. wide-flange beams are continuous over all five suspended spans. Having practically no effect on the stiffness of the bridge, they function primarily to support the bridge deck between cable-truss panel points. However, they are subjected to small secondary stresses due to the overall deformations of the span under live load.

• **Remote site made job tough**—It would have been an intriguing job to erect this unusual structure in a loca-



SUSPENDED ROADWAY is supported on steel stringers, floorbeams and girders. Purpose of girders is to transfer loads to suspenders; they do not have stiffening function.



LOWER-CHORD CABLES are prestressed and anchored to the concrete floor in the end spans. The floor is free to slide on the suspended steel.

tion convenient to a source of materials, equipment and skilled labor, but constructing it in an area 50 miles from San Salvador, relatively inaccessible by highway, was a real challenge.

While the first 35 miles to the bridge were paved, the highway was a tortuous mountain road. The last 15 miles consisted of nothing more than an oxcart trail. Thus, it was necessary to build a complete camp to house all warehousing and mechanical services needed for construction, as well as a group of houses and offices for supervisory personnel.

It was also necessary to provide crushing and screening facilities, because coarse aggregate had to be manufactured. The tropical climate, furthermore, made it essential that a gang of laborers, using machetes for sickles, be continuously assigned to grass cutting to keep the lush rainy-season growth from taking charge of operations. If allowed to go unattended, even fence posts sprout and become trees.

The contract required that 90% of the labor be Salvadorean. Actually, there were never more than four "gringos" on the job at a time.

On the credit side, the railroad from the main port of Cutuco passed close to the site. For this reason, it was simple to transport heavy equipment once a spur had been built to the site at each side of the river.

This region is subject to severe earthquakes—a fact that had to be considered in the design of the bridge. During construction, the piers and all but one tower were completed and standing free when the severe earthquake of May, 1951, hit. The epicenter, where several towns were completely destroyed, was within 25 miles of the site. Severe tremors were felt at the bridge. Yet, neither piers nor towers appeared to suffer any damage.

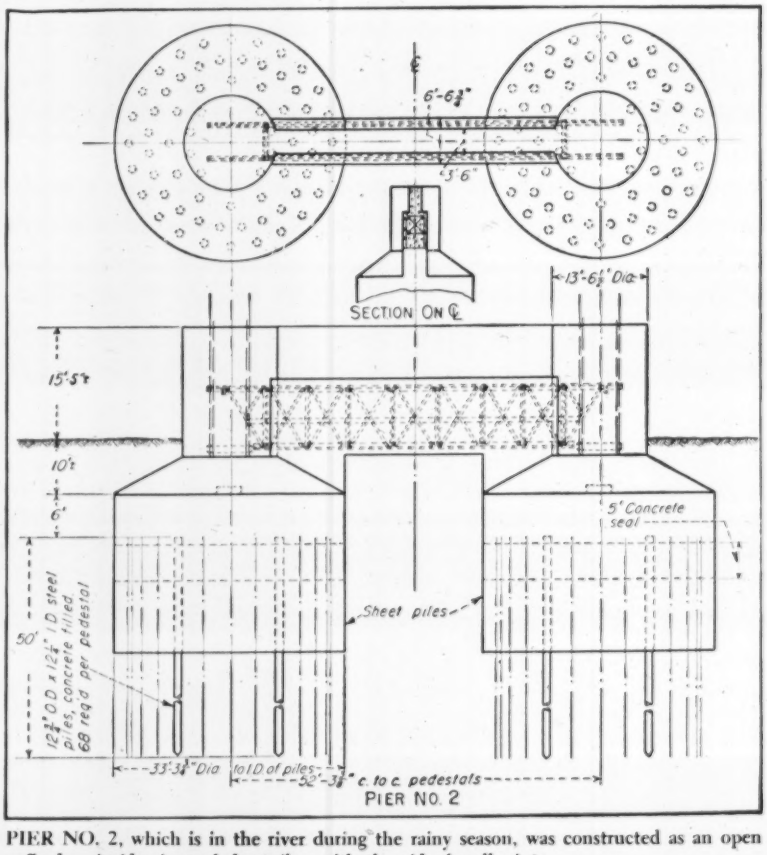
• Foundations posed problems—Subgrade conditions vary over the site. The river channel is bounded on the east by a low shelf of sedimentary rock known as talpetate and on the west by alluvial deposits of sand and clay. Three main piers and one anchorage are founded on each type of material. One of the piers (Pier No. 2) on the west side can be considered to be in the river, since the surface at that point is almost invariably inundated during the rainy season (May to November).

On the east bank, concrete foundations were carried to rock. On the west, all piers were founded on concrete-filled pipe piles. The anchorage, however, is of the dead-man type, without piles. The resultant force on the anchorage is practically normal to the sloping forward face at about its midpoint.

During construction of Pier No. 2, rings of permanent sheetpiles were used as open cofferdams. First, they were driven through the sand formation, without excavation. As excavation and dewatering proceeded, the shells were made rigid by casting a series of reinforced concrete rings inside.

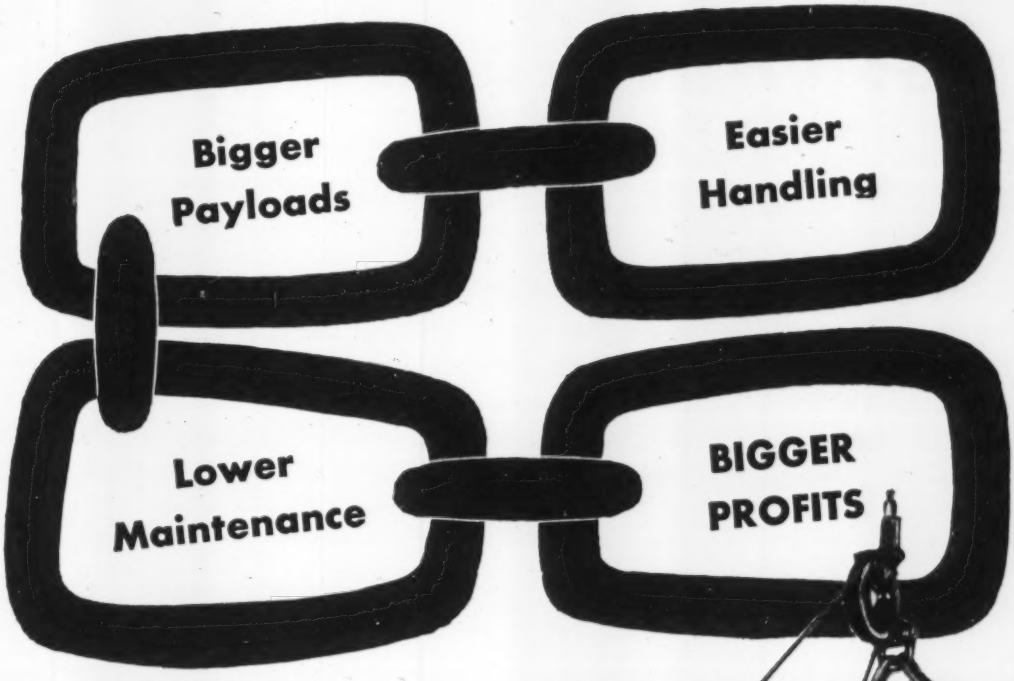
This portion of Pier No. 2 foundation work was successfully executed for one pier leg. When work on the other was under way, however, differential pressures caused the bottom of the excavation to boil up, due to the lightness and porosity of the volcanic sand, before all the concrete rings were placed. Bottoms of several of the sheetpiles on the river side were displaced inward.

This difficulty was overcome with the aid of wellpoints. Equipment was installed to reduce the volume and velocity of water flowing inward past the lower points of the sheetpiles to a sufficient extent to control operations. This made it possible to remove the damaged sheetpiles and replace them with new ones. After that,

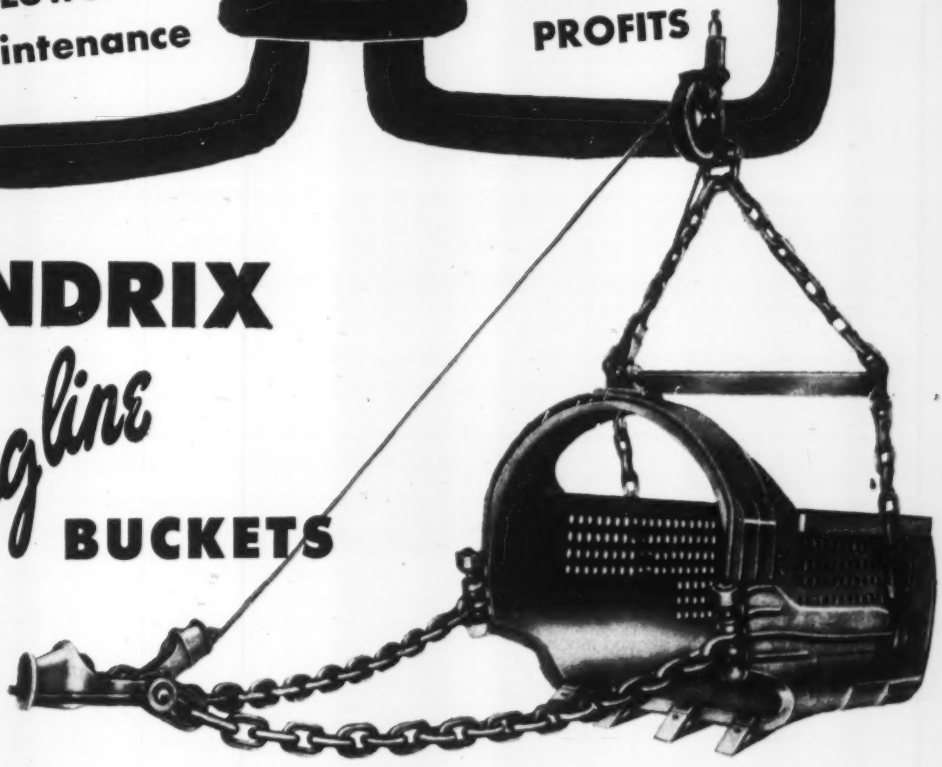


PIER NO. 2, which is in the river during the rainy season, was constructed as an open cofferdam inside rings of sheetpiles, with the aid of wellpoints.

OPERATION *Chain Action*...



HENDRIX *Dragline* BUCKETS



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Standard of the Highway

means were found to drive the bearing piles without internal excavation or dewatering and to pour a concrete seal before dewatering. Once this had been accomplished, the pier was completed without incident.

• **Steel work beats anchorage**—Unusual problems had to be solved in constructing the foundations for the west anchorage. Methods of handling them will be described in the following article. Suffice it to say, the presence of a clay stratum and a high water table, plus the intervention of the rainy season, made it impossible to carry anchorage construction to completion without interruption. On the other hand, it was imperative, if possible, that the cables and suspended steel be erected during the rainy season. Hence, the contractor built the upper portion of the anchorage before the rainy season and postponed the remaining foundation work until the succeeding dry season.

The construction joint was located near mid-depth of the anchorage, with one-third the mass above, two-thirds below. Yet, the portion of the anchorage cast initially provided sufficient resistance to enable the main cables, suspenders and the suspended steel to be erected.

The Moretrench Corporation did an excellent job of designing wellpoint equipment for this difficult job. Its predictions were verified in the field.

• **Load tests follow erection**—Towers were erected with gin poles. Main-cable strands were pulled across the river, attached to anchorages, raised into position on the tower saddles and adjusted by conventional methods. Then, cable bands were assembled at the tower tops, together with the diagonals, and slid to position.

Suspended steel members were hoisted either from the ground or a barge, with tackle attached to the main cable. Finally, the concrete deck was placed.

After the concrete had attained sufficient strength, the lower-chord cables were tensioned and anchored. Then, sand was spread over the full length of the bridge to apply a uniform load equivalent to one-third the design live load. Under this condition, very little adjustment was found necessary in the lengths of the diagonals, thus checking nicely the computed and measured lengths.

Later, 75 trucks loaded with sand, each weighing 15 tons, were placed on the bridge to simulate various live-load conditions. Following these load tests, the bridge was officially presented to the Republic by Luis Castro, the contractor's agent, and accepted by Col. Oscar Osorio, president of El Salvador.

For the government, supervision of construction was under the general control of Atilio Garcia Prieto, minister of public works, and his subsecretary, Baltasar Perla. Julio Mejia was resident engineer. The U. S. Bureau of Public Roads acted as consultants.

The bridge was built by the John A. Roebling's Sons Co. under a contract with the government calling for the design, manufacture and construction of the whole project. Design computations and drawings were carried out under the direct supervision of H. K. Preston, Jr. W. A. Reeve was contract manager and general coordinator of all field operations. Also, N. J. Sollenberger, H. W. Hills and J. E. Nixon fulfilled key roles in the field. Wilfredo Mejio, of El Salvador, executed the original layout and triangulation, plus later control surveys.

How wellpoints aided anchorage excavation

Byron J. Prugh
Assistant Chief Engineer
Moretrench Corporation
Rockaway, N. J.

Wellpoints played a triple role in the construction of the west anchorage of the cable-stiffened suspension bridge over the Lempa River in El Salvador. They dewatered the subgrade, stabilized the soil and relieved uplift pressures.

These functions were determined by five different layers of soil encountered at the anchorage, which is 500 ft from the river.

(1) The top layer, about 15 ft deep, is essentially an alluvially deposited coarse sand, which is relatively light in weight (specific gravity about 2.0 to 2.6) because of its volcanic origin. This layer is dry except during flood stages.

(2) The second layer, 20 ft thick, is composed of sandy clay with fine-sand lenses (upper clay stratum).

(3) Under this clay stratum is a 24-ft thick lower layer of stiff, brittle clay, full of pipes caused by the disintegration of organic matter in the original deposit.

(4) Next is a 15-ft thick layer of medium to fine sand with traces of clay.

(5) Fine sand grading to coarse sand and gravel underlies these layers.

• **Water level varied greatly**—The contractor decided to build the west anchorage of the suspension bridge in an open excavation. At the time work started, the upper sand layer was completely above the water table. To safeguard the excavation in clay, this sand layer was removed over an area much larger than the anchorage. The water table then was 3 ft below the exposed surface.

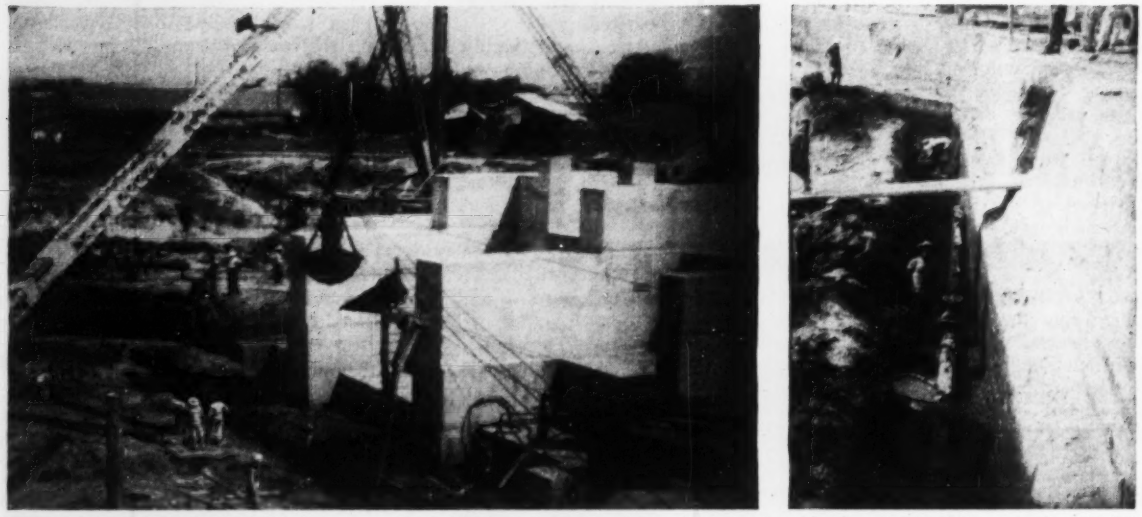
To dewater the upper clay stratum, 100 wellpoints were installed on a 500-ft header that encircled the anchorage atop the layer. Also, a well was dug about 500 ft inland from the anchorage to indicate normal groundwater levels. It showed that during the period of pumping operations, the groundwater table varied 17 ft—from 6 ft below the top of the upper clay layer during the dry season to 11 ft above during a flash flood. Nevertheless, the first-stage wellpoints were able to lower the water table to the top of the lower clay level.

• **Rainy season halts digging**—At the time the wellpoints were installed, the rainy season was approaching, and the contractor considered it difficult, if not impossible, to complete the anchorage during that period. However, he wanted to proceed with cable and suspended-steel erection. So he decided to construct the upper portion of the anchorage before the rainy season and postpone remaining operations until the succeeding dry season.

With the construction joint placed about midway in the anchorage, the excavation for the upper portion followed exactly the dimensions of the anchorage. The first-stage wellpoints provided complete dewatering to the designed depth of about 15 ft. The remaining 3 ft for this excavation was dewatered by open pumping.

• **Pressure relief needed**—In planning the construction program for the rest of the anchorage, the contractor took into account the peculiar conditions at the base. The anchorage terminates only about 10 ft above the bottom of the lower clay stratum, below which is sand and gravel providing free access for heavy groundwater pressure. Hence, a blowup of the bottom of the excavation from this pressure was possible. To guard against this, a second ring of wellpoints was installed along an 8-in. header 24 ft below grade. To keep excavation to a minimum, the header was placed in a hand-dug trench.

These wellpoints gave both pressure relief and soil stabilization.



ANCHORAGE EXCAVATION for suspension bridge was kept dry by wellpoints along headers in hand-dug trenches (right).

Of the 75 installed, 51 were used for pressure relief. About 60 ft long, they extended through the upper and lower clay layers, through the fine sand layer and into the loose coarse-sand pressure layer. At the top, the holes around the wellpoints were sealed with impervious material for the purpose of insuring maximum pressure relief.

The second-stage wellpoints reduced the uplift pressure against the bottom of the clay layer to such a degree that the contractor was able to excavate in the open to the bottom of the anchorage. Progress was carefully controlled by groundwater elevations and uplift pressures as measured by 11 piezometers.

To indicate the importance of the wellpoints, it is noteworthy that if the pumps on the depressurizing system were stopped for two minutes, the water would rise in the piezometers about 10 ft. Lowering the water 10 ft in the piezometers took about 6 hours, but lowering the water the same distance in the wellpoints took several days.

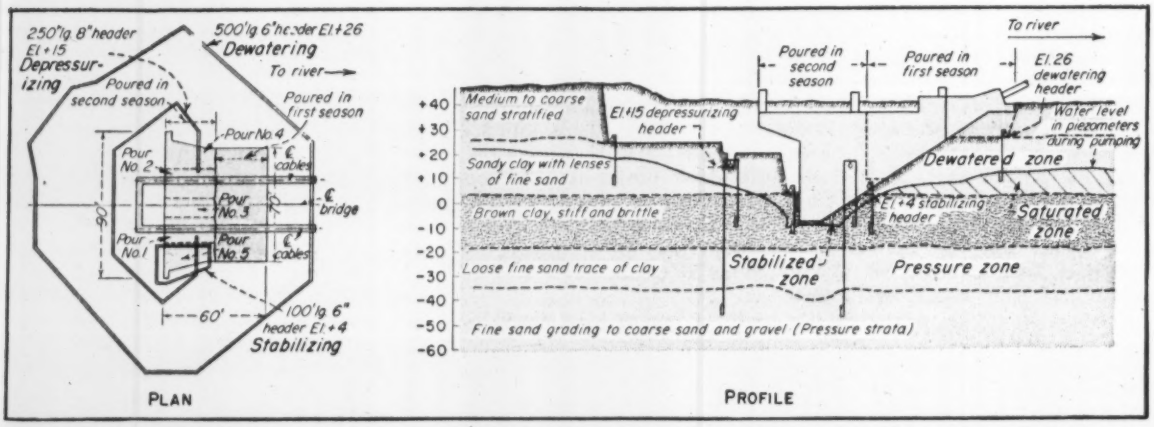
• Soil stabilized too—The 24 soil-stabilizing wellpoints reduced the water content of the upper and lower clay layers. When the water content of the lower layer was thus cut, and the residual moisture even further decreased by the action of sun and air, it was possible to excavate with almost vertical slopes. When the banks alternately became wet and dry, however, earthquakes or pump vibrations caused vertical shearing or sliding of the soil. Hence, it was essential to keep the soil dewatered at all times and to take precautions to prevent injury to personnel. Spare wellpoint pumps furnished the necessary reserve for uninterrupted service.

The soil-stabilizing wellpoints allowed the excavation to be carried out in the dry to within 9 ft of the bottom of the anchorage. From this level down, five separate pockets, each extending the full depth, were excavated. The first two concrete monoliths cast in these pockets were in line with the cable anchors built the previous spring. They prevented movement of the upper portion of the anchorage while the rest of the pockets were dug.

• Last stage pumps little water—This lower excavation was stabilized by a ring of 30 wellpoints on a 6-in. header, 12 ft above the bottom of the anchorage. These pumped relatively little water; yet they kept the excavation dry. Hand excavation was used for the last foot, allowing concrete to be placed against undisturbed soil.

All wellpoints were self-jetted. Water discharged was collected in a masonry flume around three sides of the excavation at grade and was finally discharged about 300 ft downstream.

John A. Roebling's Sons Corp. was the general contractor. Moretrench Corporation designed and supplied the wellpoint system and supervised the installation.



SUBSURFACE CONDITIONS made it necessary to use the wellpoints for dewatering, depressurizing and soil stabilization.

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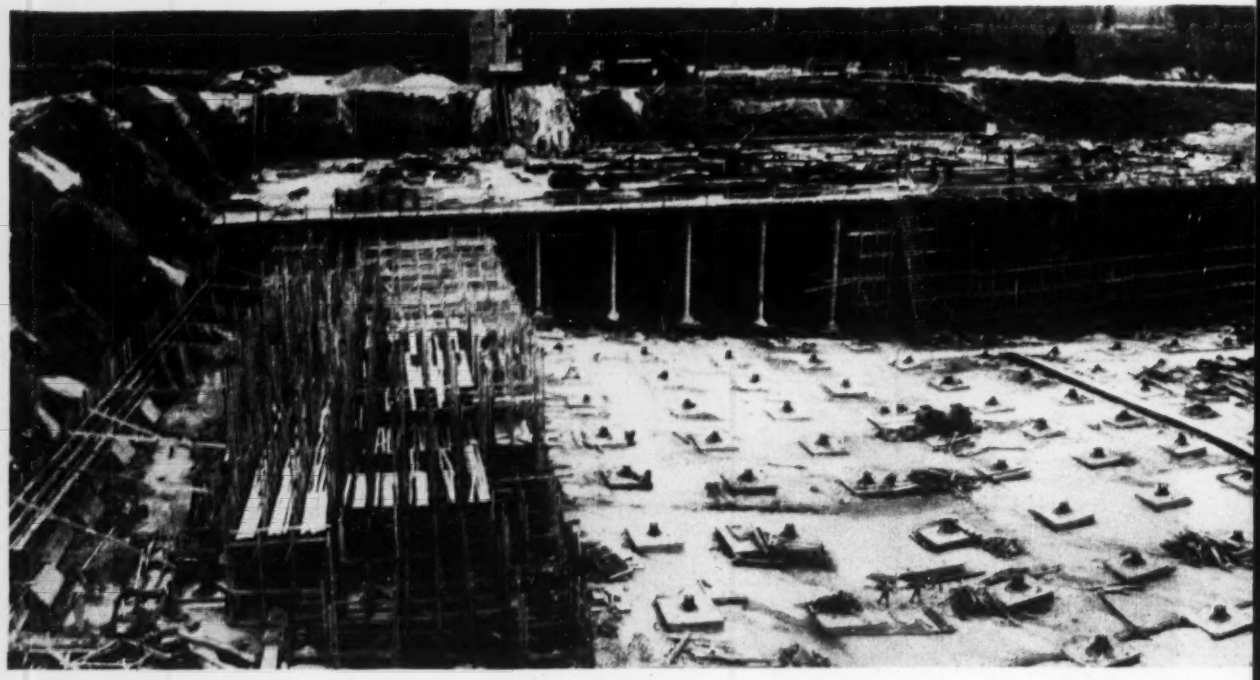


Reinforced concrete clear-water basin——built

A 30-mg clear-water basin at the Dalecarlia water treatment plant in Washington, D. C., is being built by engineers who are intent on keeping cracks out of the finished concrete structure. Here are their special efforts to turn the trick:

- Walls of the basin, standing as high as 45 ft, have 50% more temperature steel than called for by design standards.
- Floor and roof slabs, both 360 ft square, are being poured with 4-ft gaps down their centerlines in both directions.
- Corner pieces, 900 to 3,500 sq ft in area, are omitted in the original pouring of these concrete slabs.
- Centerline spaces and corner omissions will be poured at the end of the job, after major portions of slabs already poured have had ample opportunity to set and settle.

"Maybe we'll avoid some cracks by these means," says E. A. Schmitt, chief of Washington Aqueduct's water supply division.

(Washington Aqueduct is the agency within the Corps of Engineers' Washington District with responsibility for collecting and treating water for the District of Columbia. It supplies water to the District Water Department for distribution.)

Mr. Schmitt exhibits a cautious optimism when he says "maybe some" cracks will be avoided. Actually he is quite hopeful that the extra effort will pay off handsomely in a sound, watertight structure.

From the substructure up this reservoir is built to be leak-proof.

• **Cushion foundation**—Rock underlies the reservoir site, but it slopes off to a too great depth to be fully useful as a foundation. Since only part of the structure could have been founded on solid rock, none of it is being allowed to rest directly on rock.

Instead, a 2- to 3-ft thick cushion of fill was rolled to 95% compaction over the entire area—over rock as well as undisturbed earth—with an underdrain system below to carry off seepage. Thus it is hoped differential settling of the reservoir floor has been avoided.

The floor slab varies in thickness from a general dimension of 10 in. to 20 in. at its edges.

To get all the depth possible without undue costly excavation of rock, the floor has been allowed to slope with the rock from a reservoir depth of 28 ft, where the rock is shallow, to 45 ft at the side where it is deep.

Reservoir walls are tied into both floor slab and roof slab. Designed for a temperature range of 100 deg instead of 65 deg F, the walls have the extra reinforcing steel referred to above. Walls are 1 ft 8 in. thick at their tops and broaden out with a $\frac{3}{8}$ on 12 batter of their outside faces. Concrete is poured in lifts varying from 5 ft to 13 ft 2 in. in height.

Two baffle walls positioned diagonally in the reservoir near its inlet and outlet help to circulate the lime-treated water leaving the pH correction chamber located in one corner of the basin.

Roof-carrying columns vary from 16 to 39 ft in height and 16 to 24 in. in diameter. They are spirally reinforced. Capitals 7 ft square and $5\frac{1}{2}$ in. thick bring the load onto the columns from the 10-in. flat-slab reservoir roof. Column bases widen out to varying diameters and rest on 4-ft 6-in. square pedestals placed on the reservoir floor.

• **Crack preventives**—The roof, as well as the floor, is poured with 4-ft gaps dividing it into four quadrants. Reinforcing steel is carried right across these gaps; concrete will be poured in them after the crack-inducing forces prevalent in all new structures have been dissipated.

Corner pieces omitted in both floor and roof in the effort to avoid cracks vary in dimension: two are 30 ft square; one is 50 ft square; one (the pH correction chamber) is 50x70 ft and L-shaped.

• **Basin just a part**—The system to which this 30-mg basin belongs has grown to serve Arlington County, Falls Church and a part of Fairfax County in Virginia, plus small portions of adjacent Maryland communities, as well as the District of Columbia. The present program of expansion for this system is detailed in

to be leak-proof

House Document 480, published 1946.

At the time of its conception the waterworks expansion was a $42-million project. Today, with nothing added, except some inflation, it is a $70 million project.

The new basin at the 104-mgd Dalecarlia works is a $1.75-million construction job. It follows closely on the heels of recently completed construction of six anthrafil-filters. These brought the total to 26 filters. And 26 more are to be duplicated in future plans for the plant.

Work is started on a 450-mgd pumping station at Dalecarlia. The $5-million installation will provide four services (low, first high, second high, and third high) to the distribution system. Situated right alongside (30 ft from) the clear water reservoir, the new pumps normally will have a 25-ft positive suction head eliminating need for priming. The station will be entirely underground, except for access penthouses. Use of vertical pumps will keep square footage of floor down to a minimum.

Excavation has begun on the pumping station which, however, is still in the final stages of design. Greeley & Hansen, of Chicago, are consultants on the clear-water pump installation.

• **New river tap**—Meanwhile, consultants Black & Veatch, of Kansas City, have under design an $8-million additional raw water source, a dam and intake, on the Potomac at Little Falls. A low concrete dam will form a diversion pool from which the pump station with an ultimate 500-mgd capacity will pump water through a rising 10-ft dia tunnel one mile to Dalecarlia treatment plant. Plans are due to be ready late this year.

Also in the cards for District of Columbia water supply are a new intake on the Potomac River at Great Falls; a two-mile 48-in. third-high service main to augment a 36-in. line at Dalecarlia; a $2.5-million chemical building at Dalecarlia; a new chemical building at McMillan treatment works in the north section of the District (Dalecarlia is at its western extremity); a crosstown main from Dalecarlia to the low-service area; and a 40-mg third-high service reservoir built in two 20-mg halves.

These major items in the plan will boost the present total supply of 204 mgd from Dalecarlia's rapid-sand and McMillan's slow-sand plants to a firm capacity of 342 mgd, an overload capacity of 427 mgd. Needs should be satisfied through the year 2000.

The work is under direction of Col. A. J. McCutchen, District Engineer, Washington District, Corps of Engineers. Contractor on the 30-mg basin is Cramer-Vollmerhausen Co.

• **D. C.'s water history**—More than a century ago the Army Engineers were given a directive to make "necessary surveys, projects, and estimates for determining the best means of affording the cities of Washington and Georgetown, then separate communities, an unfailing and abundant supply of good and wholesome water."

Their first system was completed 10 years later, but Engineers have been building on it ever since. No treatment was provided at first, the slow sand filtration plant in McMillan Park being an early addition. Other early additions included a high-lift pumping station to reach elevated areas of the city.

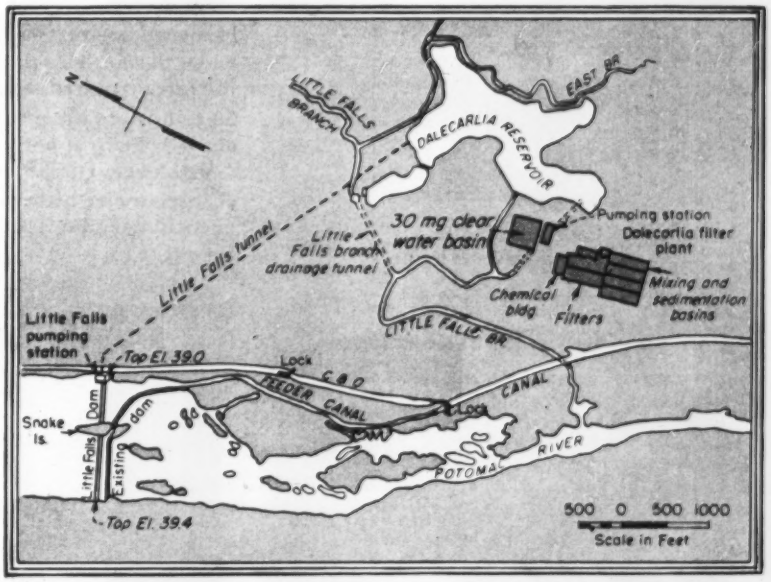
With World War I came a 44% population influx to the District, putting a strain on existing facilities. And the increase in population of the nation's capital continued between the two world wars, as government bureaus expanded and there was a great increase in personnel.

An expansion program, begun in 1920 and completed by 1927, added the Dalecarlia plant with its initial rapid-sand filtration capacity of 80 mgd. This work included a high-lift pump station at Dalecarlia and a second raw water line from Great Falls, plus reservoirs and transmission mains.

The Dalecarlia work completed in 1927 was expected to meet all needs through 1980. But that wasn't figuring on World War II and what it did population-wise to the District of Columbia.

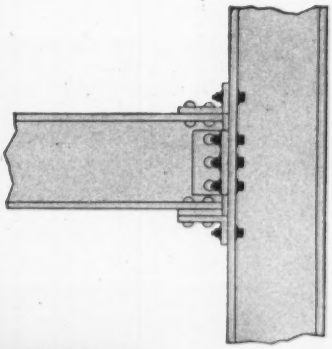
Population zoomed during World War II; and the area served had come to include the parts of adjacent Virginia and Maryland communities referred to above.

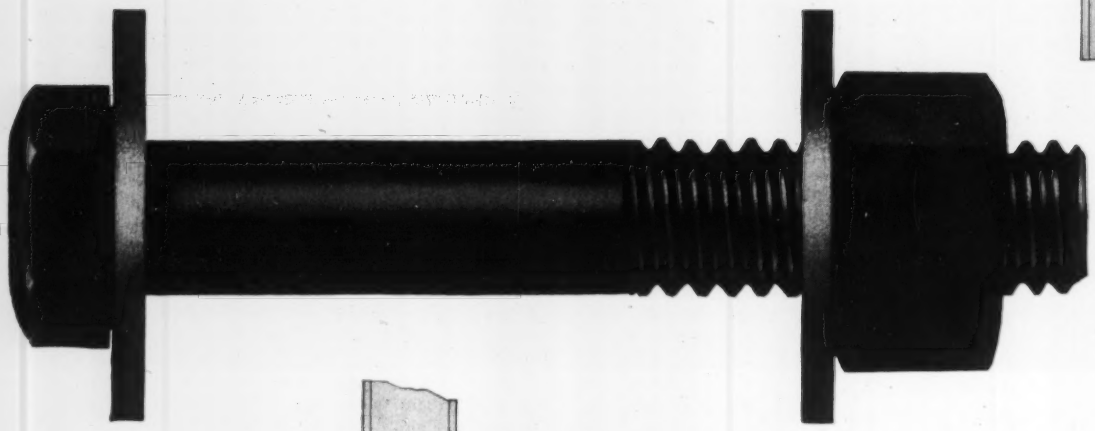
It was in the face of this great growth of water demand that the expansion program of 1946 was written.

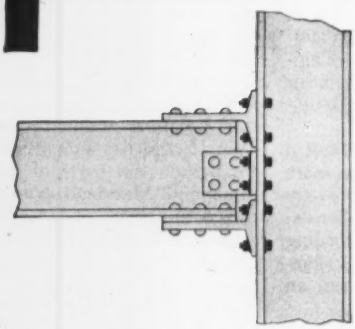


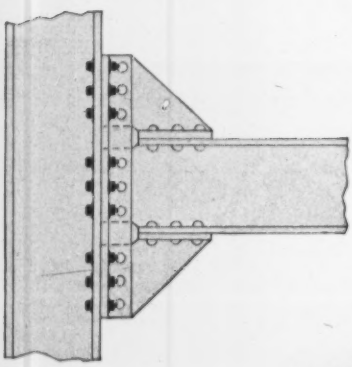
NEW FACILITIES FOR DALECARLIA water plant in Washington, D. C., will include additional water source at Little Falls, besides the present construction of a clear-water basin.

Save Construction Time with BOLTED Joints









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PERLITE CONCRETE placed on lath embeds the expanded metal, which serves as positive moment reinforcing. Wire mesh is added for negative moments.

Perlite concrete roof cast on metal lath

Expanded metal rib lath not only reinforces the roof slab of the Highland Drive Elementary School, Brecksville, Ohio, but during construction replaced forms for the lightweight, perlite concrete deck.

Lath was tied to steel roof joists and 3 in. of low-slump perlite placed on it. The surface was finished by screeding with a wood float.

Pressing through the openings in the expanded lath, the perlite embedded the lath to reinforce the deck, a minimum amount dropping through. The surface of the perlite slab was covered with builtup bituminous roofing.

Cost of the completed roof, including perlite concrete, metal lath, and built-up roofing, was $0.56 per sq ft. Cost of the perlite concrete per inch of thickness averaged 7¾ cents per sq ft.

The coefficient of heat transfer for the 3 in. deck—the mix is one bag of cement to four bags of perlite—is 0.25. Load tests of a 1:4 mix on ⅜-in. rib lath show that a 2½-in. perlite deck on a 24-in. span has an ultimate strength of 920 psf, and a 3-in. deck on a 32-in. span with the same lath has an ultimate strength of 705 psf.

In the Highland Drive School, besides the ¾-in. rib lath an additional reinforcing of 6x6 wire mesh was incorporated to minimize cracks over the joists.

The perlite slab weighs less than 10 psf. The designers point out that the load-carrying capacity of the slab is comparable with a minimum of 2 in. of structural concrete that would weigh 25 psf. Furthermore, this 2-in. slab even with an additional inch of insulation would have a coefficient of heat transfer (0.286) greater than that of the 3-in. perlite slab.

Harris and Nosek of Cleveland, Ohio were architects, Barber and Magee the structural engineers, and Hoelzel Construction Co. of Cleveland, Ohio, was the contractor.

EXPANDED-METAL lath was applied easily to open-web steel joists. Openings in lath are small enough to eliminate almost all droppings of low-slump perlite mix. Mixer (right) was placed on high movable stand reaching to the edge of the roof.

Perlite heat coefficients

"U" factors for perlite concretes have been established by the Armour Research Foundation at the Technology Center of the University of Illinois. The heat transmission coefficients are given below for various mixes of concrete in proportion to perlite.

Mix	1:4	1:5	1:6
Average compressive strength	415 psi	250 psi	165 psi
Oven dry density	35 pcf	29 pcf	26 pcf
* 1″	0.750	0.610	0.560
* 2″	0.376	0.305	0.280
* 3″	0.250	0.204	0.187
* 4″	0.188	0.153	0.140
* 5″	0.148	0.122	0.112
* 6″	0.125	0.102	0.094
* 8″	0.094	0.077	0.070

*Calculated U factors for perlite concrete of thickness indicated.

Alaska airbase jobs

Nineteen Air Force construction projects at Elmendorf, Ladd and Eielsen bases in Alaska totaling an estimated $37.5 million have been released from the Budget Bureau freeze order that tied up award schedules on $210 million in military construction work slated for early bid call. Col. L. H. Foote, Alaska district engineer says the latest unfreeze order brings to $254 million the amount of construction slated for the season that normally gets into high gear in mid-May.

JENSEN INTERCHANGE, proposed $3-million traffic interchange project, for Houston, Tex., is superimposed on this photo by Urban Expressway Engineer W. J. Van London. Extending over the city's fifth ward, it will be the central interchange of the $100-million Houston expressway system. It is planned as a by-pass to eliminate present downtown congestion while still providing easy access to the city's business section.

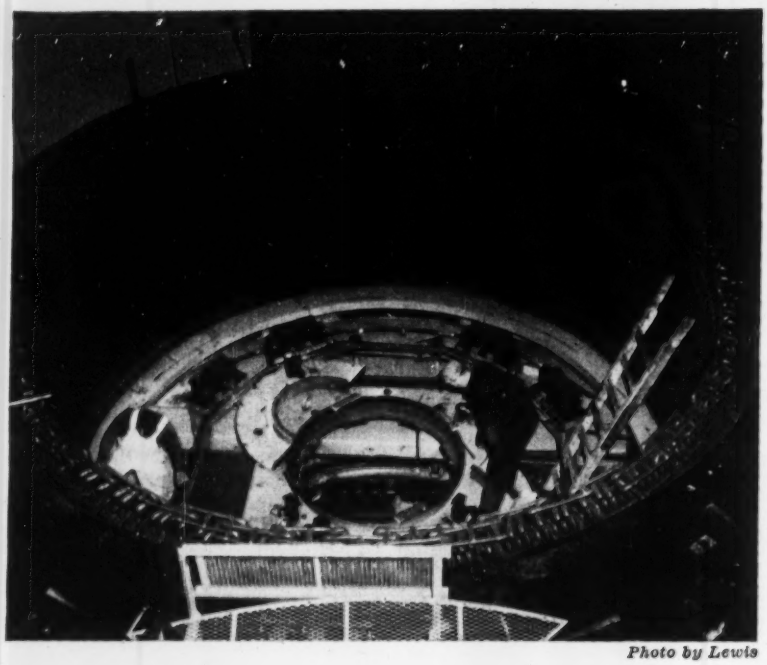
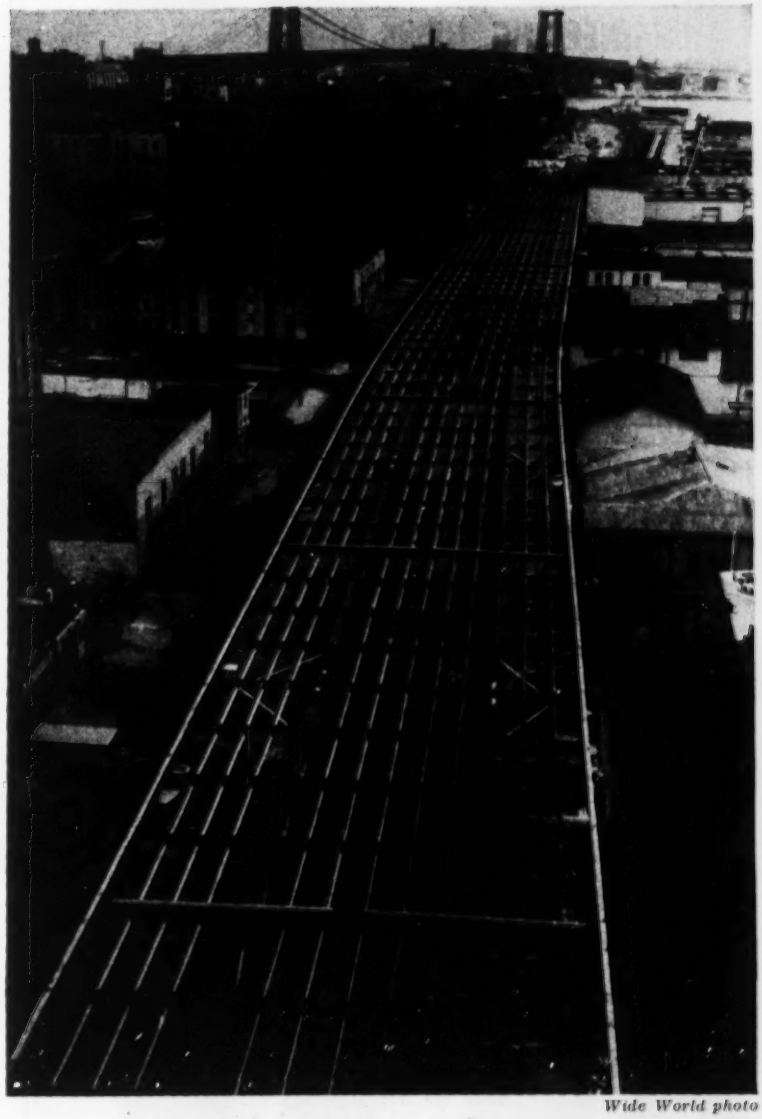


Photo by Lewis

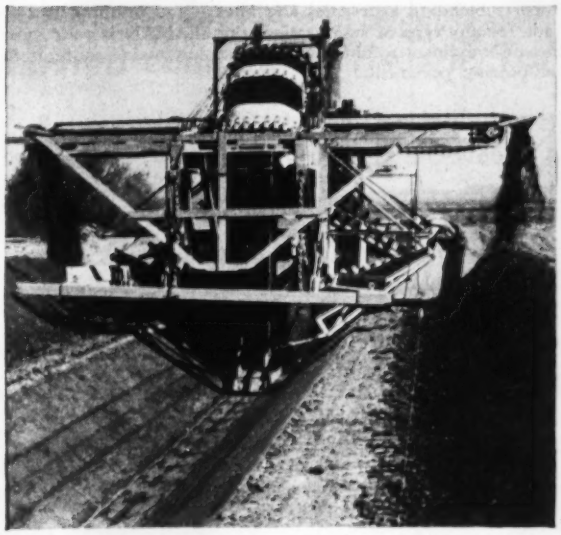
WHISK BROOMS and dust cloths are used to clean the stator of this 65,000-hp electric pump motor before placing the rotor at the irrigation pumping plant at Grand Coulee Dam. The pump—one of the most powerful in the world—is the 6th of 12 to be installed.



Wide World photo

MANHATTAN BELT ROUTE — Where the bowsprits of sailing vessels once reached inward over South St. another link in New York's belt route around Manhattan Island is nearing completion. This elevated highway will connect Franklin Delano Roosevelt (East River) Drive, near top of photo, with Battery Park Underpass which ties in with the West Side Highway, on the other side of the island. Designed by the engineering staff of the Borough President of Manhattan, the 1.7-mi six-lane structure is being built by Fehlhaber Pile Co., New York at a cost of $11 million. In the background: Williamsburg Bridge.

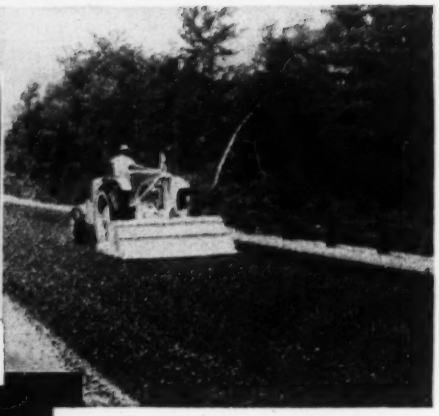
SPECIALTY machines like trencher (below) have all but consigned the lowly mule to a life of leisure. But not quite. At the Bureau of Reclamation's Gila project in southwestern Arizona, Morrison Knudsen Co. uses this Buckeye trencher to excavate and trim canal section in one operation. But a short distance away a mule named "Old Red" is leveling the canal's lateral berms, too narrow for the giant earth moving equipment. "Old Red" moves slowly, surely and noiselessly, unmindful of the clanking contraption nearby, confident that man just can't get along without long-eared help.



Bureau of Reclamation photos

Clearing a large area of brush and trees up to 3 in. in diameter.

Area cleared and finished in one pass with SEAMAN and with Rake.



The SEAMAN mixing, blending and finishing a bituminous pavement.

from site clearance to finished pavement

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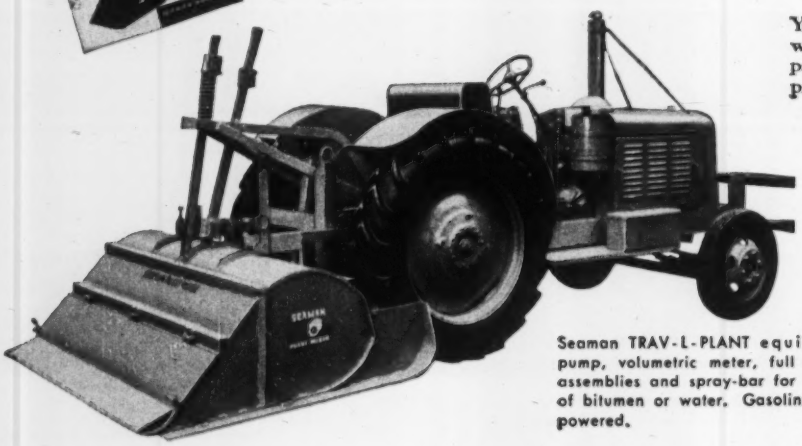
Earth Fill Compaction: High density specifications are easily met (generally exceeded) when the SEAMAN is used to pulverize and mix the soil with water prior to compaction. Working in 6-inch lifts, the SEAMAN blends the soil perfectly and reduces voids to a minimum so that even 100% densities are obtainable. In a large earth fill job the contractor stated the SEAMAN had saved him $175,000 in reduction of roller trips, working time and in the amount of water needed to secure specified density.

Base Stabilization: And of course, in mixing in-place, properly blending aggregates and fines — and finishing to fine grade for any type of stabilization, the SEAMAN is your most efficient equipment to obtain a low cost, low maintenance, high load-bearing pavement.

Your choice of the SEAMAN for your work — from site clearance to finished pavement — will prove to be a highly profitable investment.



Seaman TRAV-L-PLANT equipped with pump, volumetric meter, full tachometer assemblies and spray-bar for application of bitumen or water. Gasoline or diesel powered.

SEAMAN MOTORS *Inc.*

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LAKE FOR RECREATION is pointed out on model of Don Mills project by Karl C. Fraser, vice-president of the developing company. The residential area (center left) will be flanked by the industrial sites.

Planned community rises in Toronto

Residential area started in Don Mills project; Industry and shopping centers included in plan

Ground was broken this month for 12 model residences in the mammoth Don Mills project in Metropolitan Toronto, Ont., seven miles from the city's center. This is the second phase of the community that will feature integrated residential, industrial and shopping areas. Total cost is expected to run about $200 million.

Industrial construction is well under way with several plants completed and others under construction for such firms as International Business Machines, Philco Co., and Barber Greene Canada, Ltd. Factory buildings have been restricted to one-half of the plot with the remainder reserved for landscaping. All plants will have a minimum of noise and smoke nuisance.

• **Shopping in future**—The third part of the project—the shopping center—is scheduled to be built next year. Estimated cost is $7.2 million.

In addition to the three major areas of construction, a lot of money is to be spent in supplying necessary municipal services. Work already has started on the first part of the sewage treatment plant which ultimately will

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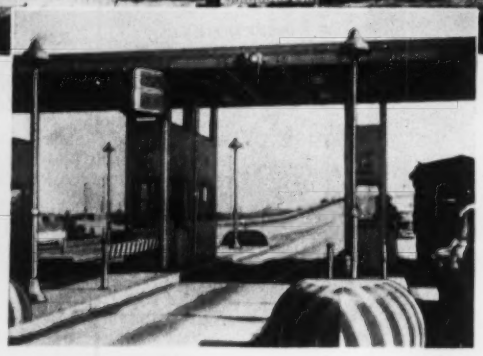

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cost $1,250,000 and have a capacity of 3 mgd. The first phase of the new plant, being built by the Schwenger Construction Co., Ltd., will meet the requirements of present industries and a population of 4,000.

First contracts for other utility construction have been let this month to Ruscica Bros. Co., Ltd., Toronto contractors. The work involves sewer and water main installation. Road construction contracts also are expected to be signed this month. Total utility construction in the earlier development is expected to run between $7 million and $8 million.

• **Site and background**—The project is located in the Don River valley on land that has been farmed for the last 200 years. Main highways connect it to Toronto proper. The area is also served by a railroad.

Part of the river will be widened to form a one-mile long lake in the center of the development. This will be done in conjunction with the Don Valley Conservation Authority and will provide facilities for bathing, picnicking, playgrounds and park areas.

The project is planned to provide homes for from 30,000 to 35,000 people, many of whom will be only ten minutes driving time from their employment in the industrial areas.

As planned now, the development will have a core devoted to the shopping center, the high school and several apartment house groups. The residential areas will surround this center while the industrial areas will be located on the north and south.

• **Development company**—Heading the project is one of Canada's biggest industrialists, E. P. Taylor, best known in the United States for his wartime role as Canadian chairman of the joint war aid committee in Washington. Active head of the company is Karl C. Fraser, vice-president.

Consultant architects are E. G. Faludi and John Layng, both of Toronto. Consulting engineers are King, Coons, Phelan and Porter, Toronto.

• **Another valley project**—Another project in the Don River valley is expected to get under way soon with the construction of 3,000 homes, 1,000 apartment units and a shopping center. The development—to be known as Bayview Gardens—will cover 600 acres and cost about $60 million.

Location is near the intersection of Bayview and Sheppard avenues. Sponsors of the project are Principal Investments, Ltd., and the Bayview Development Co., both of Toronto.

Authorize St. Paul bonds for civic improvements

St. Paul, Minn., was authorized by the state legislature to issue over $17-million in new bond issues to finance two plans—the improvement of Wold-Chamberlain airport and the Capitol Approach project.

The major part of this sum is to be devoted to the airport as the Metropolitan Airport Commission had its bonding limitation raised to $30 million from the previously authorized $15 million.

So far the MAC has floated $5 million in bonds for construction of runways, taxiways and other projects at the airport which serves both St. Paul and Minneapolis.

• **Airline headquarters**—In asking for

Plastic pipe curves

Whatever its other advantages or disadvantages, plastic pipe rates with leading Hollywood actresses when it comes to throwing curves.

Here's an installation in Haubstadt, Ind., showing its use in water main extensions to a new subdivision. No fittings were used to get around a construction problem.

This particular pipe was extruded by the Crescent Plastics Co., Evansville, Ind., from raw materials supplied by Eastman Chemical Products, Kingsport, Tenn. (For the latest on plastic pipe, see ENR, May 7, p. 37.)

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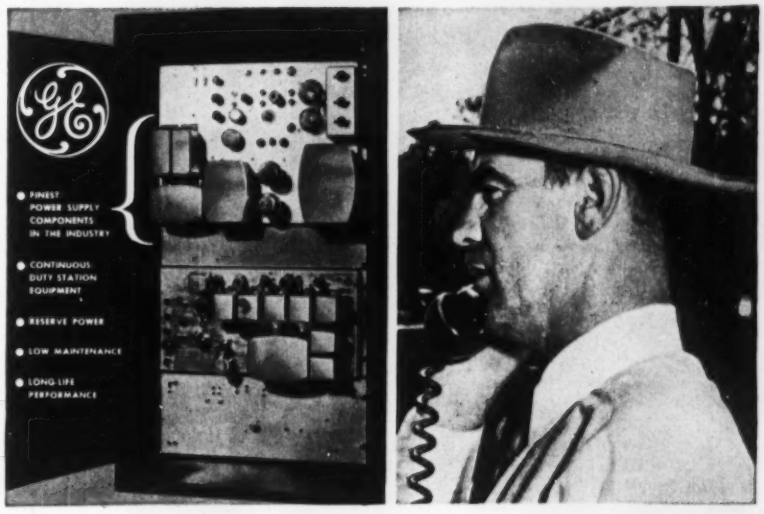

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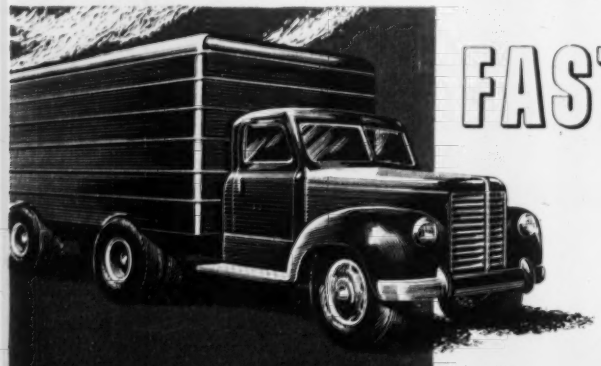

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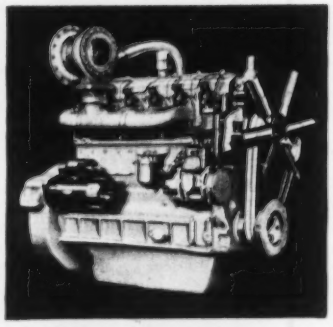

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the bond boost, MAC officials told legislative committees the funds may be a major factor in keeping Northwest Airlines headquarters in the Twin Cities. (ENR, March 26, p. 52).

The commission is now in a position to spend approximately $12 million for construction of hangars and shops for an overhaul base for NWA—which would pay for them on a long-time rental basis. The airline is still making up its mind whether to retain its headquarters at the airport or move elsewhere. Chicago and Seattle have been mentioned as possibilities for a new location.

MAC also will construct a hangar costing $1 million for North Central Airlines and is considering future construction of a terminal building for $4 million.

• **Capitol approach**—While the airport projects are really just getting under way, the Capitol Approach project apparently is on its last lap.

Completion of the project to clean up the area fronting on the state capitol buildings was boosted by two legislative actions: Appropriation of $350,000 of state funds to acquire land for parking facilities, and authorization for the city to issue $2,250,000 in bonds with which to complete the city's share of the project (ENR, Oct. 25, 1951, p. 112).

Minnesota legislators hope the latest action will be given consideration by the federal government as part of the national slum-clearance redevelopment program.

So far the city has spent $2 million and received $4 million from the federal government.

Boston plans outlined, $60 million in 6 years

The Boston, Mass., Planning Board has recommended to Mayor Hines a new capital improvements program totaling $60 million, to be spread over the next six years.

Two-thirds of the sum would be raised by bond issues, one-third from current funds.

Schools are given the largest allocation with new buildings and additions proposed for $15.4 million. Next largest is a recommended 500-bed hospital on Long Island (In Boston harbor) Cost: $5 million.

Other large projects are an incinerator in the Southampton St. area for $2.7 million; new high pressure waterlines, $1.6 million; sewage works, $3.8 million; and new and reconstructed streets and highways at a cost of over $13 million.

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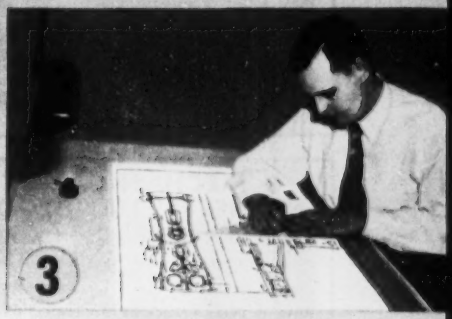

A positive Repro-Negative print is made from the corrected negative... on this the draftsman adds the new design... and a master is ready to produce the required number of prints. *Ready* in a fraction of the time required previously when the unchanged design was retraced in full.

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- Kodagraph Autopositive Cloth is used to reproduce new pencil drawings directly, which helps eliminate costly ink tracing.

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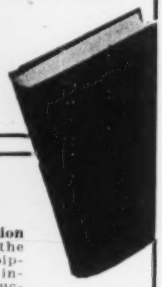

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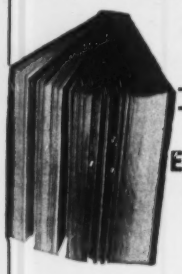

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MUNICIPAL

Municipal briefs . . .

• **California schools**—A Los Angeles Chamber of Commerce-sponsored conference on the soaring cost of school construction concluded that unnecessarily expensive designs—and costly changes in completed designs—are the chief causes of the high costs. Solution: Harder work in preliminary planning by architects and school officials.

• **Pittsburgh tunnel**—It looks as if tolls will be charged for travel through the proposed Duquesne Heights tunnels in Pittsburgh, Pa. Officials of eight interested municipalities have approved the plan to speed construction plans. Total cost: about $14 million.

• **Idaho sewers**—The State Supreme Court of Idaho last month upheld the right of towns to pledge water system revenue for payment of sewer system bonds.

• **Maine airport funds**—Recently the Maine legislature boosted Portland's plans to enlarge the municipal airport to the tune of $250,000. Total cost is expected to run about $1 million and the state funds will not become available until the city raised the rest of the money. The bill still needs the governor's signature.

• **Housing defeat**—North Carolina's House defeated a bill which would have allowed an area to be cleared through condemnation if two-thirds of the area were blighted. Existing law gives the right only when the entire area is blighted.

• **Coney Island houses**—New York's famous playground, Coney Island, may get a city-financed housing project. The city planning commission approved the move early this month. It is part of an effort to "up-grade" the area into a predominantly residential area.

• **Defense facilities**—The HHFA has approved loans and grants totaling $1.2 million for construction of water and sewer facilities in Warner Robins, Ga. More facilities are required by a population increase caused by increased defense activity in the area.

• **Inflation item**—You could have bought Manhattan Island from the Indians for $24 in 1626. Today the Agua Caliente tribe has offered to sell the City of Palm Springs, Calif., a square mile of their reservation for a mere $408,000.

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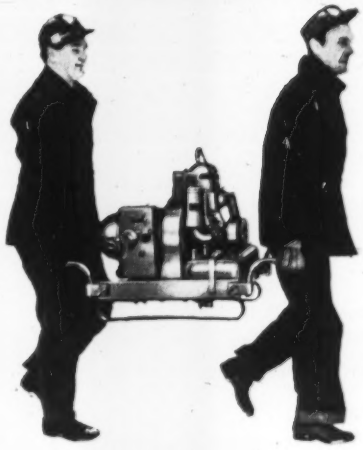

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You can operate these tools, or floodlights, when you need them, any place without worry over your power supply.

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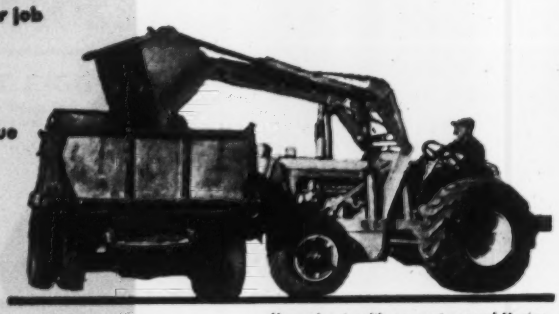

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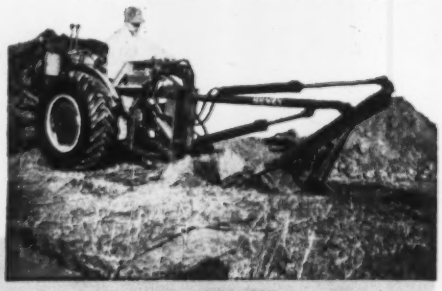

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MEN AND JOBS

Haynes takes new post

The Producers' Council, national association of building products manufacturers, has named John L. Haynes as its new managing director. He has been director of the Building Materials Division of the National Production Authority, and before that chief of the Construction Division of the Department of Commerce.

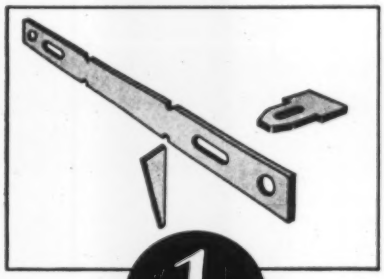
Careers . . .

• **Appointed**—United Engineers & Constructors, Inc., have elected as vice-presidents: **F. N. Floyd, Arthur G. Middleton,** and **John N. Rolston** . . . Chicago Bridge and Iron Co. has made **George S. Sangdahl** a vice-president. He heads a new sales office in Pittsburgh . . . **Emory F. Patterson** has shifted from Stran-Steel Division of Great Lakes Steel Corp. to the executive sales staff of Luria Engineering Co. . . . **W. Brewster Snow** leaves Duke University to be chairman of Rutgers University Civil Engineering Dept.

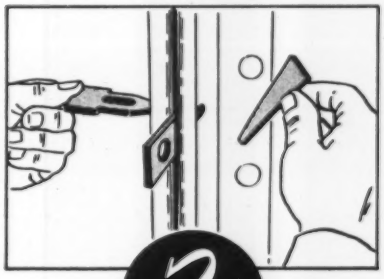
• **Local government appointments**—The Ohio River Valley Water Sanitation Commission has elected as chairman, **H. E. Moses,** consulting chief engineer of the Pennsylvania State Department of Health. Vice-chairman is **W. W. Jennings,** of Electro Metallurgical Division, Union Carbide & Carbon Corp. **F. H. Waring** has been re-elected secretary; and **Robert K. Horton** treasurer.

• **Elected**—**Richard E. Dougherty,** consulting engineer and former vice-president and chief engineer of the New York Central System, has been elected president of the Moles, New York association of tunneling and heavy construction men. **George F. Ferris,** president of Raymond Concrete Pile Co., becomes first vice-president, and **William A. Durkin,** former president of Walsh Constr. Co., second vice-pres.

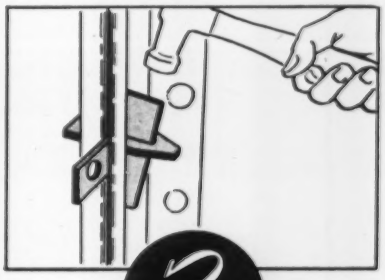
Three pieces comprise the unit.



Slip panel into position with **FLAT BAR TIE** between panels. Put **KEY WEDGE** thru frames and slot in **BAR TIE.**



Stick **WEDGE** in slot in key wedge. Drive fast with hammer.



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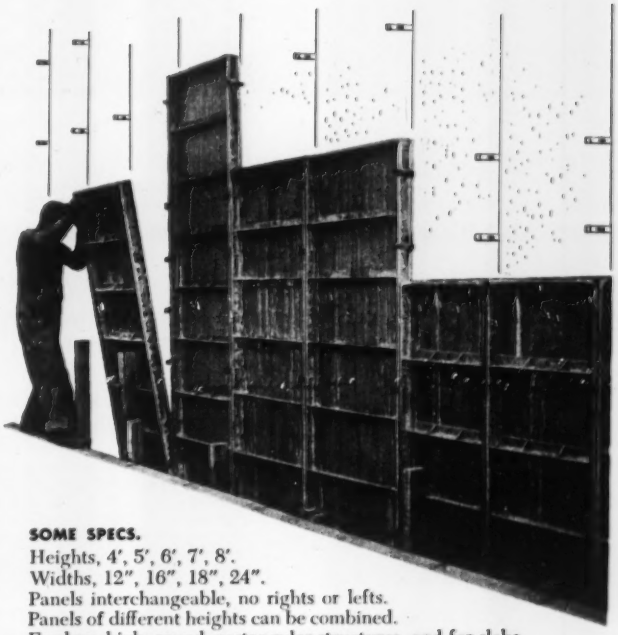

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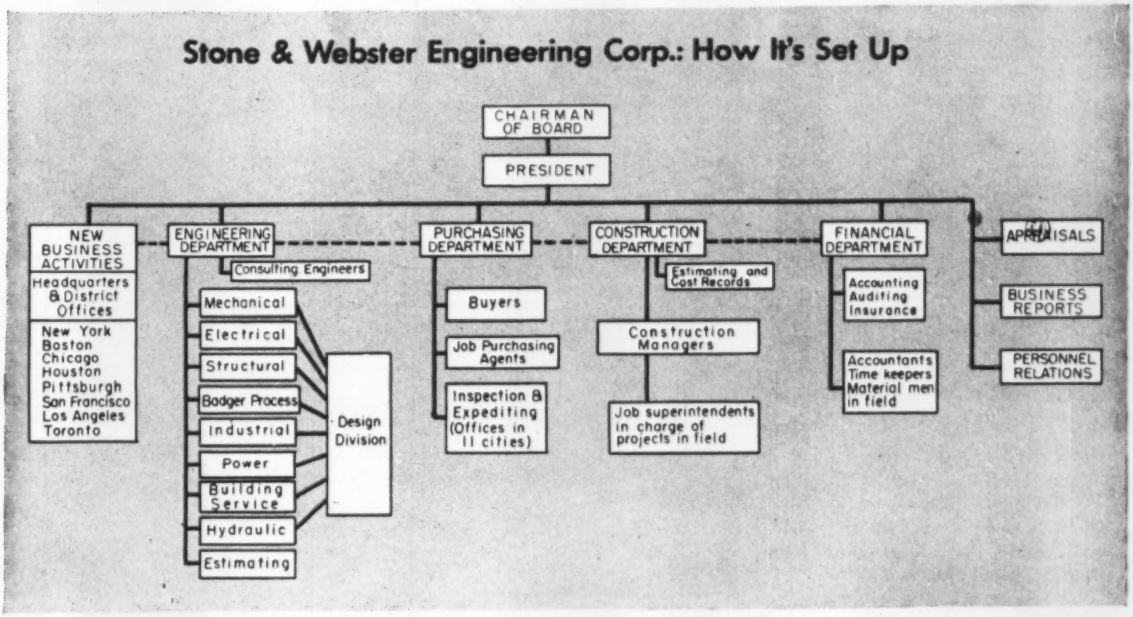


From Edison to the atomic age: Stone & Webster rolls along

By J. P. Chamberlain

In the year 1889, when the incandescent electric light was barely 10 years old, two young engineers set up a partnership in Boston to provide engineering service to the struggling electric power industry.

The partners, Charles A. Stone and Edwin S. Webster, were only a year out of Massachusetts Institute of Technology. They started as consulting engineers, soon broadened into design and construction work. As the firm's experience increased, its activities spread to management and financing of operating utility companies.

Today, Stone & Webster is known a long way from Boston. Businessmen in almost any industry who want a plant built, or who need management advice or who would like to do financing, can go to one or another of the S&W companies to get what they want. The interchange of information and experience among these companies has been an S&W strong point.

The branching out of the original firm of Stone & Webster dates from 1906 and 1907, when Stone & Webster Engineering Corporation and Stone & Webster Management Association, respectively, were formed to run separate phases of S&W business. Though there have been corporate reshufflings since then, what are substantially the same two subsidiaries are operating today. The one-time association, now Stone & Webster Service Corp., provides management advice to utilities and industries.

There is one other major subsidiary of the parent company (which in 1920 incorporated as Stone & Webster, Inc.). This is Stone & Webster Securities Corporation, an investment banking house which underwrites and distributes new security issues.

However, the parent company gets most of its income from the services of the engineering corporation, which is set up to do almost any kind of highly technical engineering and construction job, and to do it just about anywhere in the world. Two exceptions: S&W Engineering does not build highways or housing, except as incidental to another job.

Last year, S&W Engineering completed or was working on design and construction of more than 120 projects in the U. S. and (either directly or through affiliates) was engaged on projects in Canada, Great Britain, Europe, South America, and Australia.

How does a big engineering outfit like S&W operate? The best way to explain is to trace a hypothetical project through from start to finish.

Let's say that a utility in the Southwest, ABC Power & Light Co. calls in Stone & Webster Engineering to decide whether and how present generating facilities should be expanded.

That's where S&W's Division of Business Reports (see chart) comes in. It studies the company and the area where it operates, decides that ABC will need a new steam plant to meet future power needs, and that the plant will be economically feasible.

If ABC decides to look further into the matter, the next step is a detailed engineering investigation. S&W engineers will analyze the factory involved and will include in their report a preliminary plan of how the new plant should be laid out, plus a preliminary estimate of construction costs.

ABC Power's offices look over the report. They may change the location of the plant somewhat, and alter other details. But eventually they decide to have S&W do the job.

Whether or not the engineering company gets the contract, it is paid for such preliminary surveys. If S&W gets the job, the contract usually will be on a cost-plus-fee basis. And S&W ordinarily both designs and builds the plant. It doesn't do design engineering for someone else, unless it can supervise construction. This insures correct interpretation of its designs and a properly operating plant.

An S&W man puts it this way: "We are an extension of the client's

THEN—Charles Stone (left), and Edwin Webster (right), S&W founders.

NOW—S&W's traveling top executives are rarely in the same place at the same time. Russell Branch (left) is president; John Lotz (right) board chairman.

ENR photo by Compton

own engineering and construction department. We save him the trouble of expanding his own staff for each job, and then having to cut it down when the job is complete."

ABC's power plant job is now assigned to an engineer in the mechanical division of the engineering department (chart, page 59). He'll have primary responsibility for engineering design, but he is only the lead-off man of a team that will include engineers from other divisions. In this case, an electrical engineer, a structural man, and someone from the power division might also be assigned.

The design stage now begins in the various divisions, unfolding gradually as key information is developed. The working force of engineers increases. "Design squads" from the design division are assigned to the job, supervised by a design manager who works with the engineers. Specifications for major pieces of equipment are worked out, and offered for bids through the purchasing department.

As bids come in from manufacturers, they are evaluated from the standpoint of comparative maintenance cost, as well as price, operating experience, and so on. Comparisons of bids, with recommendations, are passed on to ABC Power, which may make the final decision if it cares to do so.

Detailed analyses of this kind are particularly useful to utilities, since the rates they charge are based on capital expenditures, which in turn are reviewed by regulatory commissions.

After decisions are made on major equipment, orders or contracts are taken care of by the purchasing department. Delivery dates on these items are set up. Such dates will be cornerstones of the construction schedule.

Meanwhile, the engineers and the design manager are making up a drawing schedule for the several hundred possible drawings which will be required. As the drawings take shape, they are cross-checked to insure coordination. The lead-off man maintains liaison among the various engineering divisions.

• **Teamwork**—Because the typical S&W working unit is a task force of engineers from different divisions, approaching the same job from different points of view, teamwork becomes ingrained. If you talk very long to an S&W man, sooner or later he'll emphasize that this coordination between divisions is one of the main reasons for his company's success. As one says: "To do an efficient job, you can't have one section fighting another. Every part of the organization has to be able to work with every other part." As anyone who has ever been in a big organization knows, this is harder to achieve than it sounds. It takes plenty of practice.

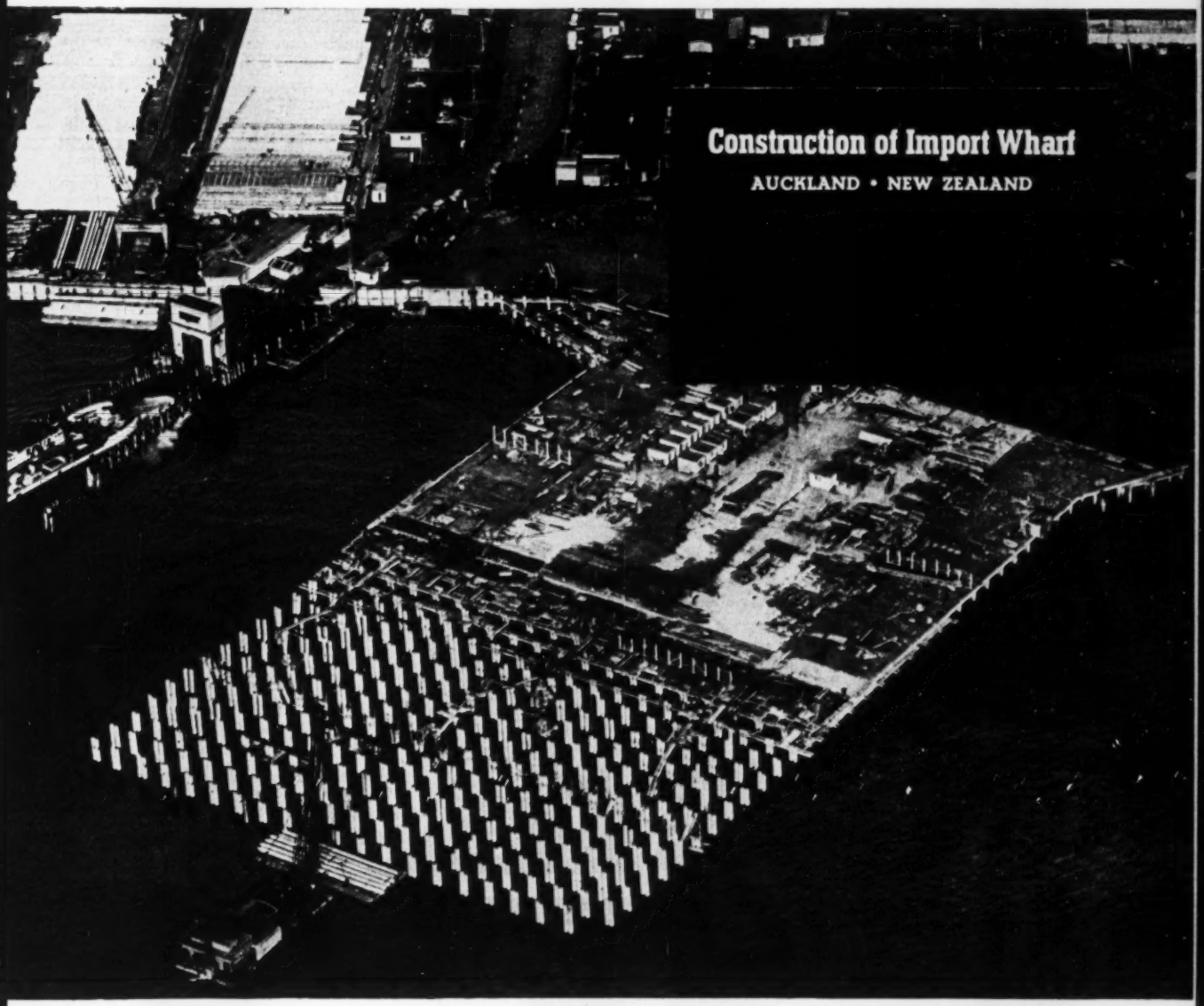
S&W people will point out that this habit of coordination makes the most of a big organization's potential. Stone & Webster has about 375 engineers in its engineering department in addition to almost 800 design personnel. The sum total of their experience covers just about every existing process and every industry. Through coordination, maximum use can be made of this experience.

As early as possible, the estimating division makes a definitive estimate of what the job will cost, working from estimates of the engineers assigned to the job, and allowing for overhead charges. "This preliminary estimate is the one the client remembers," notes a member of the estimating division. "He arranges his financing on this basis, so it has to be based on the best available information and reflect conditions as accurately as they can be foreseen."

Meanwhile, the financial department will set up a system of accounting. Since the client is a utility company, accounts will follow the form prescribed for public utilities by the state regulatory commission. Cash requirements for the period of the job will be estimated, so the client will know how much he'll have to pay, month by month.

Before the design stage has progressed very far, the ABC project is assigned to a construction manager, one of eight in the construction department who work out of the Boston and New York head offices. He may be a man who has worked with ABC before. Later, when plans become more detailed, a job superintendent is assigned from the construction department.

DOWN UNDER with RAYMOND



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Save hundreds of dollars on move after move!
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BUSINESS PROFILE

These two make up a construction schedule, working back from the scheduled completion date. This construction schedule is synchronized with the drawing and purchasing schedule.

Long before design is completed, construction will have started at the site. Along with the job superintendent, or shortly after, arrive several key men, mostly from the construction department. The setup is tailored to the job, drawn from S&W's large field force of permanent employees. But it will always include: a resident engineer; a field accountant, responsible to the financial department in Boston; supervisors for mechanical, electrical, structural, and power engineering. There might also be a cost engineer. (If the project weren't big enough for a cost engineer, the accountant would handle this function), and a purchasing agent. And, of course, a timekeeper and one or more material men. Many of the other people on the job might be hired locally.

None of the engineers at the job are the same men who planned design back in Boston. Those men are staff officers; construction is the line.

Though the construction manager has ultimate responsibility for construction, much of the load rests on the job superintendent. He has to be good. At Stone & Webster, he's usually a graduate engineer with years of experience on similar jobs. A couple of years ago, S&W figured that the average job superintendent had been with the company 16 years before he headed a project.

• **Schedule review**—As construction of the plant goes on, the resident engineer constantly reviews the schedule of equipment deliveries, to see whether equipment will be coming in on time. His delivery schedule is constantly updated through the purchasing department in Boston to reflect the latest available manufacturing information. That information comes from the inspection and expediting division of Purchasing. Men in this group work out of 11 branch offices in major manufacturing centers. If possible, they start checking major equipment items at an early stage of production to see if they are as per specification, and will be shipped on schedule in order that no time will be lost later. If necessary, this section will do its best to find raw materials for the suppliers, or suggest how to save equipment on the production line which otherwise would not meet specifications.

Each month, the job accountant

and the accounting department in Boston make out a monthly statement of expenditures, for which payment will be made by ABC Power. Accounting keeps a detailed tally of how actual expenditures, broken down in categories, are running against estimates.

As the job goes on, the lead engineer and the construction manager keep in close touch with the ABC organization.

Finally, perhaps 18 months after the project began, the last big pieces of equipment arrive at the site. Not long after, construction is complete. But before construction stops, the start-up operation probably has begun. S&W engineers check through the operation and instruct ABC operators. In the case of a power plant, the start-up can be pretty routine but in some plants, like petro-chemical or pharmaceutical operations, the whole "flow" must be adjusted by cutting in and fitting all along the line.

Finally, ABC Power & Light gets a completion cost report. This may be somewhat more than the estimate; it may be less. S&W people say, rather proudly, that since the war the total actual cost of all their projects have been less than total estimates.

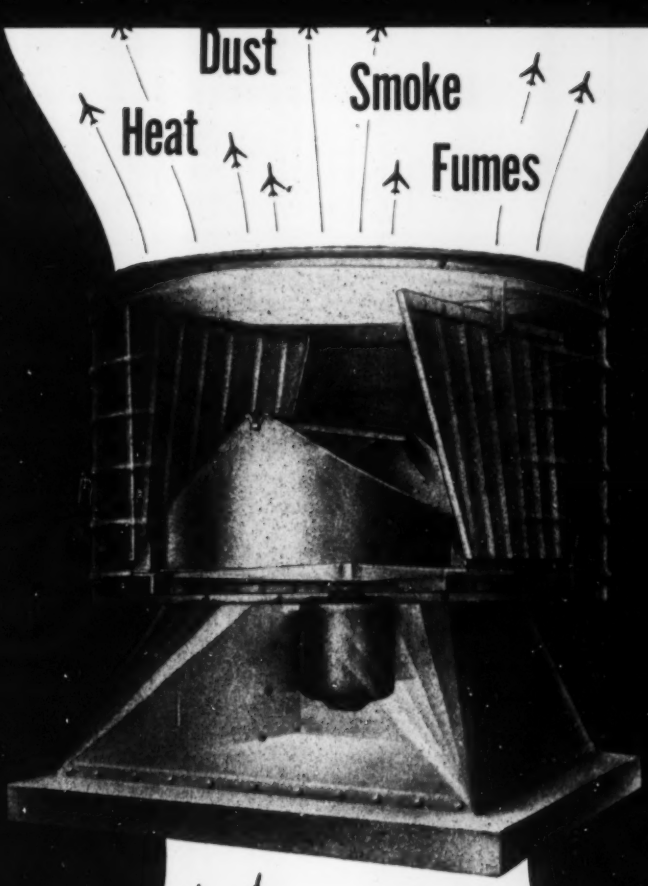
This, then, is how S&W carries out a "typical" job. Actually, of course, it would be difficult to call any job typical. Problems vary widely. But the thread that ties the whole far-flung organization is this: teamwork by many different people, directed by careful scheduling so as to bring men, designs, and materials together at the right times and the right places.

Separate negotiations

After considering the move for several years, the Home Builders Association of Greater Cleveland recently announced separation from the Cleveland Building Trades Employers Association in wage negotiations with the AFL building trades.

Touching off the move was resentment over the recent decision of the BTEA to boost its original 7.5 cent-an-hour offer to 12.5 cents. Most of the Cleveland building trades have indicated acceptance of the $1-a-day raise and the homebuilders believe that they will have to meet the raise this year.

The homebuilders' board voted to negotiate its own contracts with trades in the home building industry. Homebuilders hope to eliminate the practice of letting the BTEA set the local wage pattern in the construction industry.



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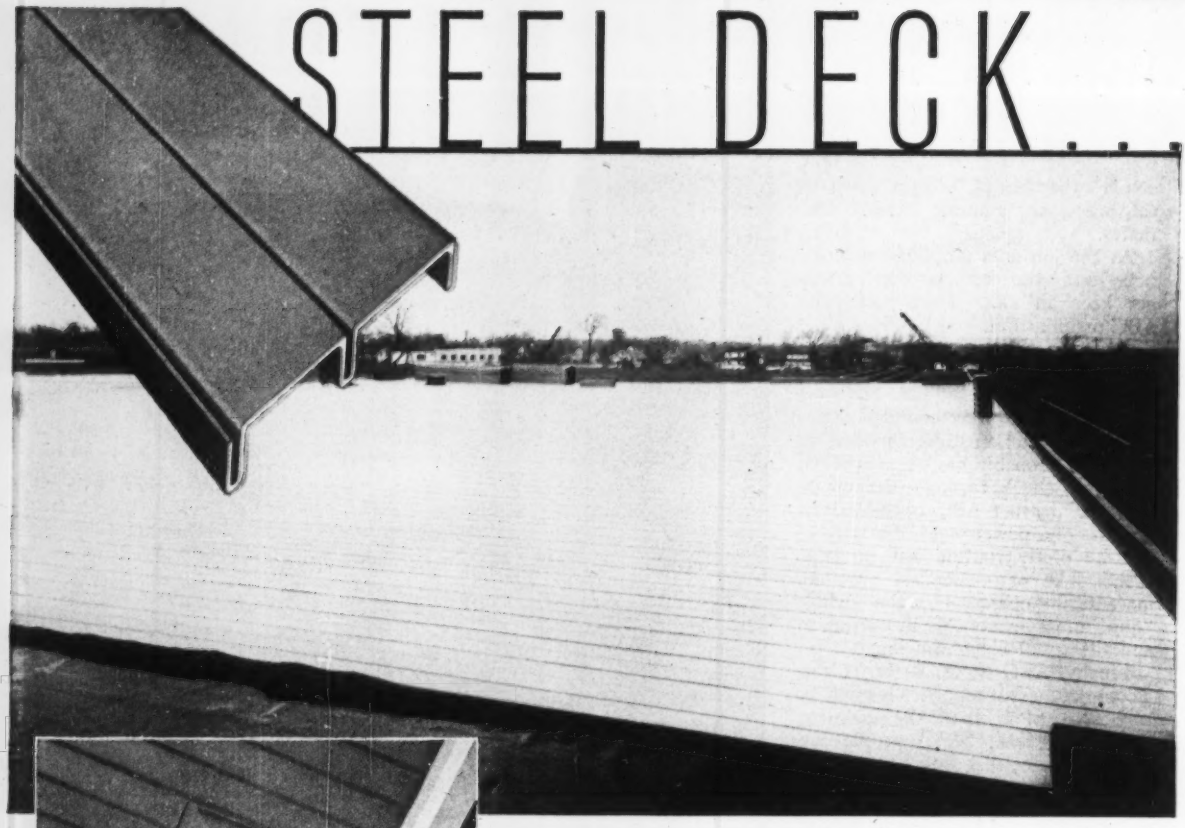

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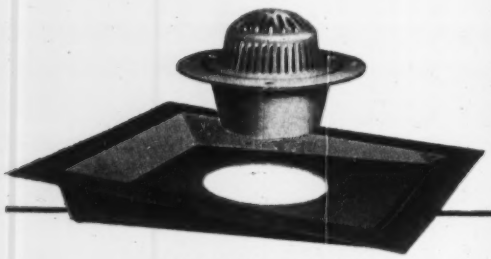

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Mahon Roof Sump Recesses for use with Mahon Steel Deck can be furnished to fit any roof pitch. Mahon Cast Iron Sumps can also be furnished for 4", 5", and 6" conductors.

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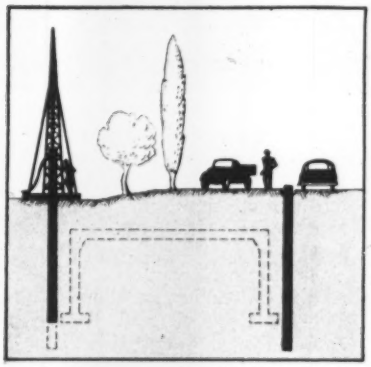
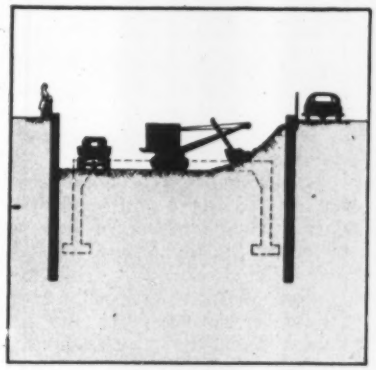
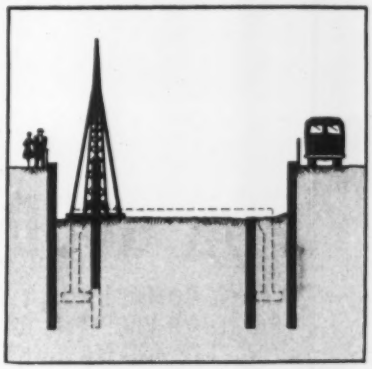
MAHON



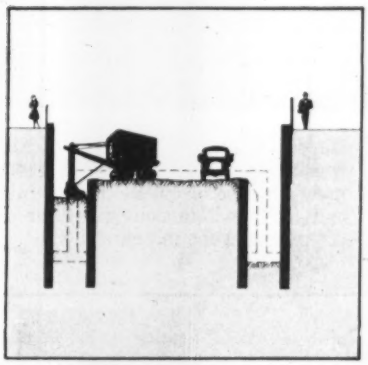
1. I-BEAM PILES ARE DRIVEN, clear of future tunnel, after removal of pavement.



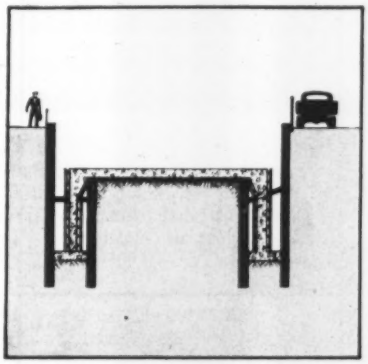
2. SHOVEL REMOVES TOP LIFT, between piles, down to level for forming tunnel roof.



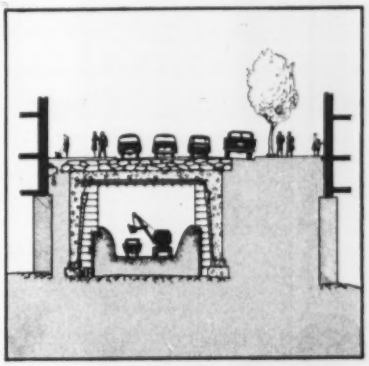
3. INNER PILES ARE DRIVEN flush with excavation and about 12 ft from outer piles.



4. SHOVEL EXCAVATES FOR TUNNEL WALLS, piles are shored, plank sheeting driven.



5. TUNNEL IS FORMED AND POURED. Roof form, requiring no support, was built on earth.



6. NEW ROAD IS BUILT after outer piles are pulled. Shovel now excavates tunnel.

Tunnel excavated after it is built—to expedite traffic in street

Sections of a new subway tunnel in Stockholm, Sweden, were built before the full excavation for the open-cut sections had been completed.

By building over the area that would later he excavated, engineers were able to reopen streets—where the method was used—in a much shorter time than the usual full open cut would have allowed.

The tunnel is of reinforced concrete, and the sections built on earth needed no supports for roof forms. This saving in supports partly offset the slower and more difficult excavation inside the completed tunnel.

The 2½-mile underground construction is in rock wherever possible in the predetermined area the subway is intended to serve. Tunneling in rock did away with the necessity of opening a good many streets in traffic-crowded Stockholm and permitted engineers

SMALL SHOVEL CAN WORK in wide, two-track, tunnel. Roof forms are stripped, I-beam piles and plank sheeting pulled as excavation proceeds.

STOP
THAT LEAK FOR GOOD

9 SIKA COMPOUNDS TO END REPAIR PROBLEMS ON CONCRETE AND MASONRY

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(SIKA No. 2, SIKA No. 4A) Leaks are easily sealed on the exposed side with quick-setting SIKA mortar. It is not necessary to relieve pressure. SIKA No. 2 is used against heavy pressure or bleeders, SIKA No. 4A against seepage or moderate pressure.

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(IGAS JOINT SEALER, SIKA CAULKING) IGAS JOINT SEALER seals even against pressure and continual movement. Will not sag, crack, dry out, become brittle or lose adhesion. In work above grade, SIKA CAULKING is used where highest resistance to atmospheric change is desired.

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(SIKA-KOTE, SIKA TRANSPARENTS) SIKA-KOTE, a protective and decorative coating in 9 colors and white, prevents moisture penetration on concrete and masonry structures. SIKA TRANSPARENTS render brick structures water-repellent and preserve their appearance.

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simply to line the rock section, instead of building a heavier and more expensive fully reinforced structure. Where broken rock and gravel were encountered, a full open cut was necessary since the excavation after the tunnel was built would have been dangerous in those areas where blasting would still be needed.

To provide bomb shelters at subway stations and at the north end of the line, a one-yard layer of rock was placed on the tunnel roof before repaving the street.

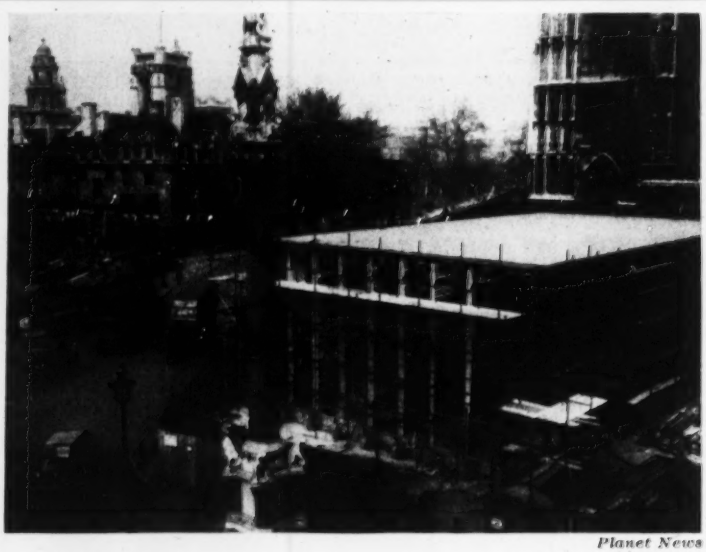
Most difficult section of the tunnel runs under a navigable channel from Lake Malaren, through Stockholm, to the Baltic Sea. To maintain shipping, half of the canal at a time was blocked by cofferdams let down to bed rock. Then blasting operations were carried out on the dry floor and the tunnel built in sections.

International briefs . . .

• **African railroads**—Belgian engineers in the Congo are forging their end of a trans-African rail line to link East African ports with the Atlantic and serve as an emergency lifeline in the event that the Suez Canal should be lost or neutralized. The rail link would save 4,000 miles of sea haulage from the West to East African bases. British engineers have proposed a second rail line through Tanganyika to increase the present facilities at their end of the trans-African link. Further developments: negotiations with the World Bank are well advanced for the construction of railways to bring out vital copper and cobalt from mines in Uganda and Northern Rhodesia to East African ports.

• **Dutch flood reclamation**—Of the 358,000 acres of land flooded by February's gale-swept tidal wave in the Netherlands, 41,000 acres are still inundated. Of the original 67 sea dike gaps, 11 are still to be closed, and it is anticipated that they will not be closed before next winter.

• **Peruvian iron ore**—Peru has signed a contract with the U. S. Steel Corp. for delivery of more than a million tons of iron ore annually from its Marcona mines. Utah Construction Co. has a 20-year contract with Marcona for the construction of port facilities and the installation of mining and ore handling equipment for development of the mines.



Planet News

Annex for the coronation— Historic old Westminster Abbey in London, England, is getting a rather modern annex built for the coronation of Queen Elizabeth. The temporary structure has light tubular trusses to carry an asbestos and felt roof. Timber framed walls are to be faced with wallboard. The brick work in the foreground will form pedestals for statues in front of what will be a large glass end wall whose panes are to be emblazoned with various coats-of-arms. Further extensions of the annex can be seen in the background.

Eimcos moving earth for fill to build major link in Pan American highway in South America.

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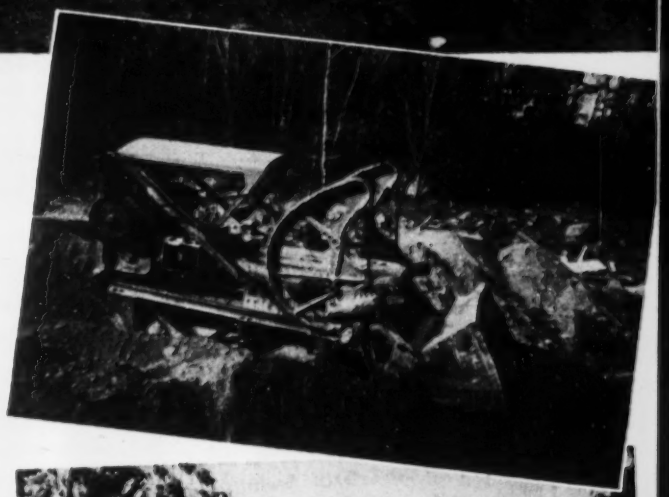

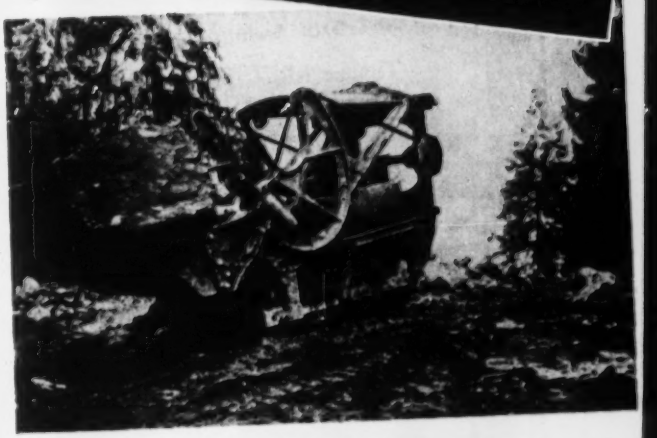

Above: As a bulldozer. Below: Road building job in Austrian Alps. The shape of the Eimco bucket and the rocker-arm digging action make it possible to pick up and move pieces much larger than with other equipment.

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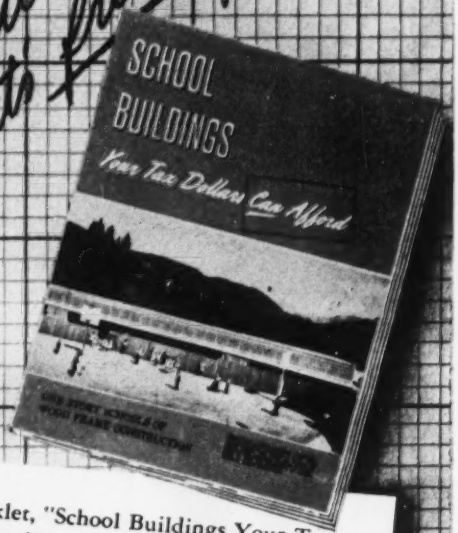

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Vapor Barriers

Roll roofing can be used as slab moisture seal

The trend toward slab-on-grade floors for houses has necessitated the development of an effective means of blocking the migration of moisture from the soil through the slab. Research conducted by the Housing and Home Finance Agency indicates that an efficient barrier can be effected with a membrane of 55-lb asphalted-felt roofing.

• **On high, well-drained sites**—Where the site is high and well drained, one layer of 55-lb roofing is considered sufficient. It should be lapped 6 in. and turned up to extend to the top of the slab around all edges. All laps should be cemented with hot or solvent type bituminous cement.

• **On poorly drained sites**—Where the site has a high water table or is poorly drained, and particularly where it is desired to protect a wood-block floor or other material that can tolerate little moisture, two layers of 45- or 55-lb roofing should be used, solid mopped between layers.

The HHFA further recommends that membranes always should be laid on a base course of well-compacted coarse washed gravel or stone. This gravel course should be high enough above the surrounding ground to be well drained.

• **Membrane requirements**—A membrane placed under a concrete slab-on-ground floor must be an exceptionally good vapor barrier. In fact, it probably should approach the effectiveness of a metal sheet in order to be satisfactory for the various types of floor finish currently used in dwellings on above grade construction.

The reason for these rather high standards is that most of these floor finishes are bonded to the concrete with a rubber or asphalt base adhesive, in itself a good moisture barrier. However, if moisture is permitted to enter and pass through the concrete slab, usually it is trapped between the slab and the adhesive. The result is an accumulation of moisture between the slab and the adhesive and subsequent destruction of the bond.

The membrane should have a long life expectancy also since replacement

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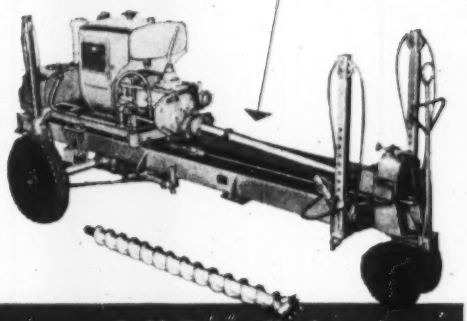

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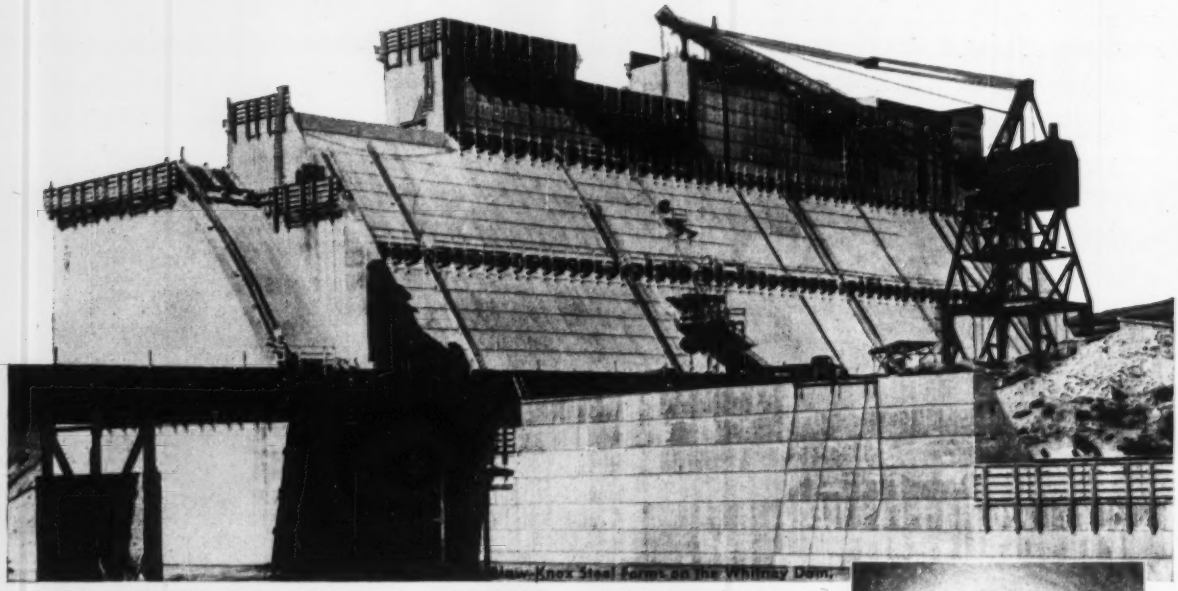

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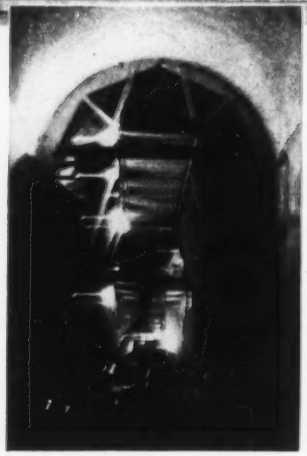

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is impossible without removing the slab. In the tests which were conducted by the HHFA, it was found that 15-lb roofing as a membrane material has a life expectancy of not more than a few years.

New membrane materials of asphalted or rubberized glass fiber mat and vinyl plastics have been developed that are comparable in efficiency with the 55-lb roll roofing. These types are superior in some ways in that they usually contain no fibrous material subject to decay or fungus. The price of these new materials is somewhat higher than asphalted felt, but in circumstances where two layers of solid-mopped roll roofing are required one layer of the new materials usually will suffice. Further information regarding these new materials may be found in the New Products section of this issue.

• **Membranes for crawl spaces**—The Housing and Home Finance Agency also conducted tests on the requirements of membrane materials that are used as ground cover under crawl-space houses.

The findings indicate that although a moisture seal for this purpose need not be nearly as perfect as one placed under a slab-on-ground floor, for durability 55-lb roll roofing is still preferred over 15-lb asphalted felt. Under crawl-space houses it is not considered necessary to cement the laps.

Further information on the application of these membrane materials may be obtained from William A. Russell, Chief, Technical Standards Unit, Housing and Home Finance Agency, Washington 25, D. C.

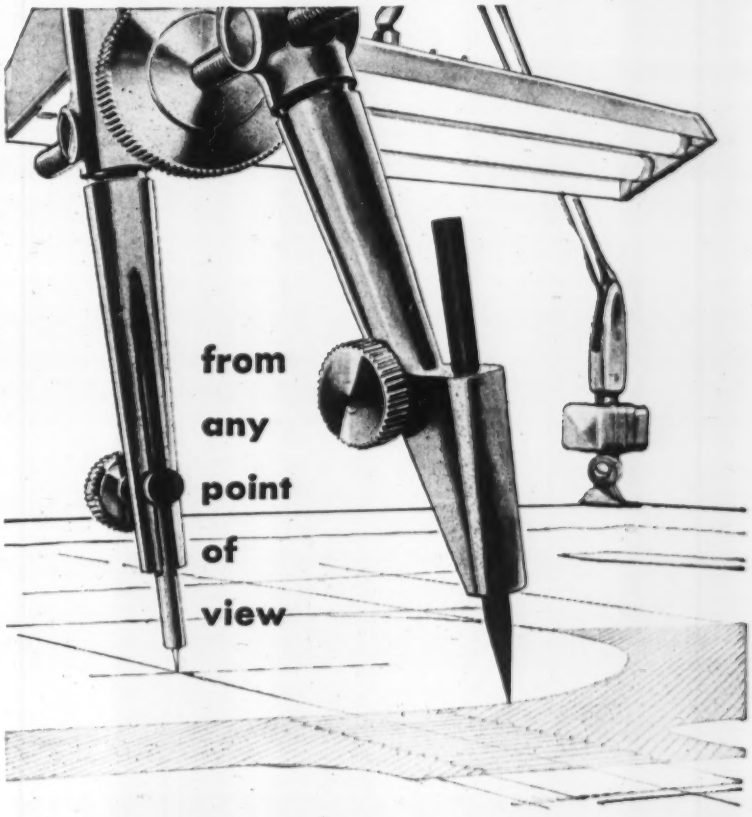
On-grade floors

Procedures for laying concrete floor slabs

Although the building of basementless houses has been accepted practice for some time, slab flooring of such structures has not always proved satisfactory in areas where the dangers of frost action are present.

The University of Illinois Small Homes Council—now well into its second year of research on the subject—has issued a report indicating that the most satisfactory slabs are those laid over a gravel-filled pit bottomed with drain tile and extending below the frost line.

• **Differential movements**—Vertical movements cannot be eliminated unless the structures are founded on



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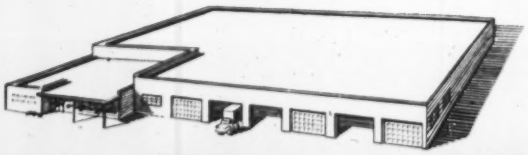

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solid rock, and since this is almost never the case with small homes, some movement must be expected. A differential settlement of ¾ in. may be assumed acceptable for small homes until further information is available.

• **Specific recommendations**—To overcome excess differential movement the council makes several recommendations.

1. Floor and foundation should be monolithic.
2. Shallow foundations should never be used on silt or silty-sand soils, but can be laid directly on clean sands and gravels.
3. Over a mixed-grain soil, fills of sand or gravel should be used beneath the floor slab to the bottom of the footing. The soil should contain enough clay to prevent capillary rise of water and subsequent freezing even over the most prolonged freezing period.
4. Footings should be placed on undisturbed soil and below any organic soil matter. If a fill is used it should extend below the footings.

• **Shallow grade beam depth**—The council has released equations to be applied to the compiling of the depth of footing below grade.

For clay soils the council recommends that the depth below grade of the footing should be:

$$d = a - \frac{\sigma}{K}$$

where "d" equals the depth of footing below grade in inches, "a" is the depth of frost penetration in inches, δ the allowable differential movement of the slab (¾ in.) and "K" is the coefficient of volume increase due to frost (0.03 to 0.05). Sand or gravel fill should be used to the bottom of the shallow grade beam for clay soil.

On sandy or gravelly soil the report recommends essentially the same equation except that the coefficient of volume increase is replaced by a porosity factor. This means that:

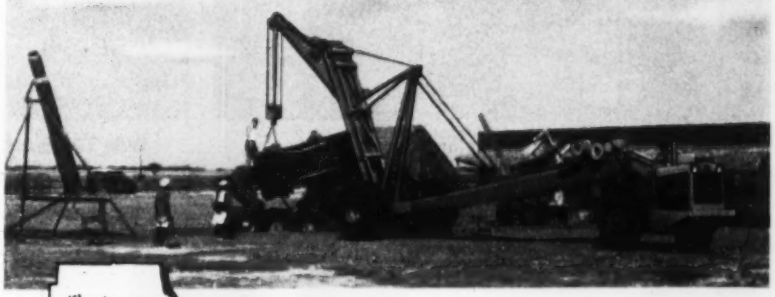
$$d = a - \frac{\sigma}{0.09n}$$

where "n", the porosity, varies from 0.25 to 0.5 for sand.

These design recommendations assume the usual dead load imposed by a frame house with trussed roof, that is, 200 lb per lin ft on east and west walls, 400 lb per lin ft on north and south walls.

Further information may be obtained by writing the University of Illinois Small Homes Council, Urbana, Ill.

324 critical man-hours saved for Solar Eclipse Expedition



Breakdown in radio telescope successfully repaired in 3 hours

Shortly before the 1952 Solar Eclipse was to occur, misfortune struck the U. S. Naval Research Laboratory Expedition at Khartoum, Anglo-Egyptian Sudan. Turntable gears on their radio telescope were sheared on a trial run. At another time, this would not have been serious, but, coming just before the eclipse, it jeopardized success of the entire expedition!

Astronomers were heartsick. They had traveled 7,000 miles to record the 3-minute event. Every second had been planned, all advance study completed. But now, it might be impossible to gather the vital data. Repairs, the scientists estimated, would require at least 48 hours work by 7 men—a total of 336 man-hours.

Sudan offers Tournacrane

Hearing of the accident, the Sudan Government volunteered its Tournacrane. Unit was driven through city traffic to the expedition site in a few minutes. With this power crane on hand, the Expedition Chief figured necessary repairs could be handled in 168 man-hours.

Tournacrane proved even better adapted to the job than he estimated. With both lift and reach up to 35 ft., plus ability to handle loads of 15 tons, it readily hoisted and positioned the telescope's fragile 2-ton dish-assembly. Its 3-way action for lifting, spotting and placing saved many precious hours. Its accurate electric controls enabled the repair crew to raise and lower component parts an inch at a time, avoiding dislocation of delicate settings and adjustments, and saving usual dismantling time. As a result, 4 men completed the entire job in just *3 hours* (12 man-hours)—for a *saving* over estimated time of *324 critical man-hours!* Not only was the telescope ready, but astronomers had ample time to re-test and readjust settings before the eclipse.

You may never have to handle as delicate a job as this, but Tournacrane can speed all your lifting. 10 to 40-ton units are available. See your LeTourneau Distributor for all the facts.

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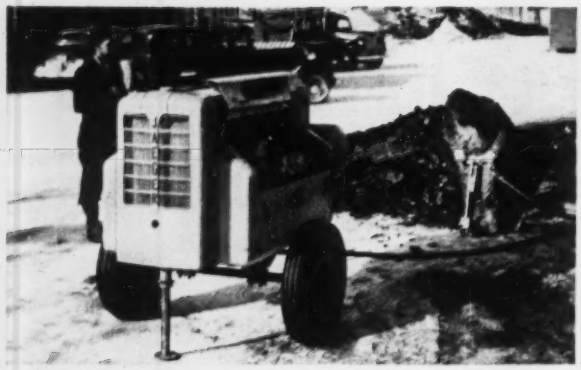

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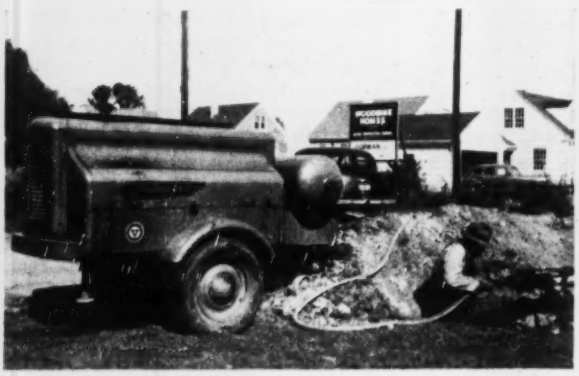
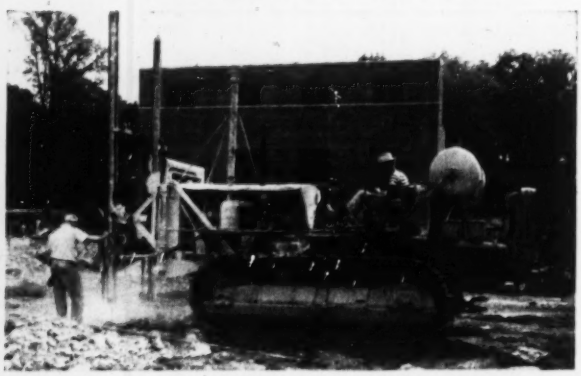
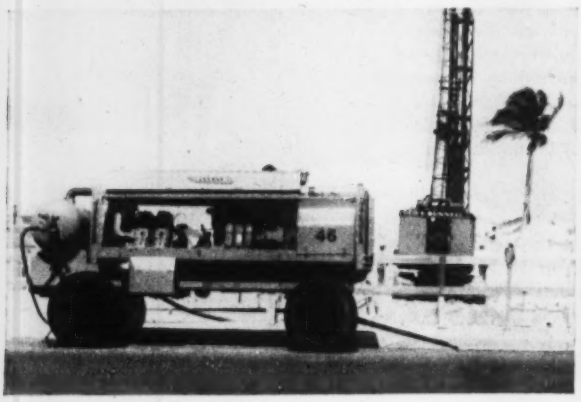


More Jaeger air speeds many jobs, such as line testing.



Tractor mounted and powered, operates two big drills.



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By delivering 50 cfm more air than the old 315 rating, the "new standard" 365 successfully operates such tools as a heavy sand blaster or 15 hp earth drill, and can run a 4" wagon drill with air to spare for plughole drilling.

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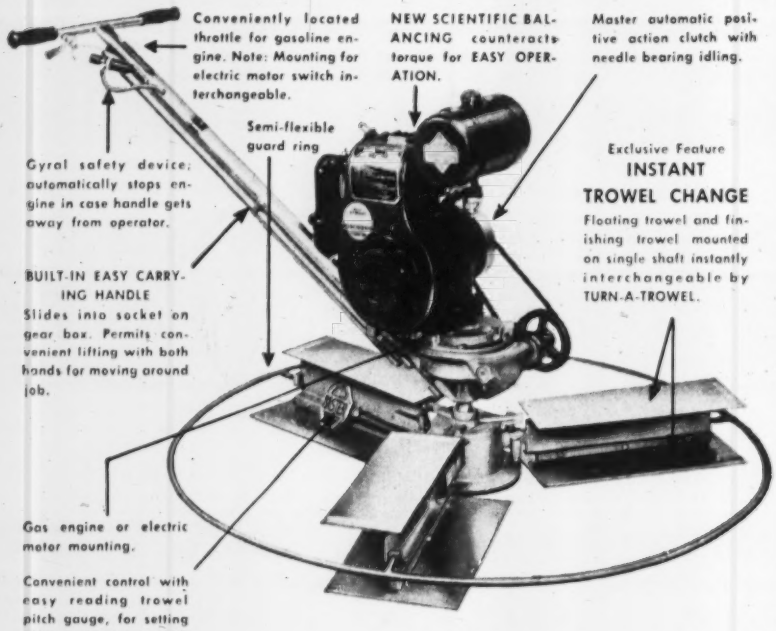
FOR FLOATING AND FINISHING CONCRETE WITH A SINGLE MACHINE 34" AND 48" DIAMETER

SET ALL TROWELS AT ONCE WITH ONE QUICK VARIABLE ADJUSTMENT


Conveniently located throttle for gasoline engine. Note: Mounting for electric motor switch interchangeable.
NEW SCIENTIFIC BALANCING counteracts torque for EASY OPERATION.
Master automatic positive action clutch with needle bearing idling.
Semi-flexible guard ring
Gyral safety device; automatically stops engine in case handle gets away from operator.
Exclusive Feature
INSTANT TROWEL CHANGE
Floating trowel and finishing trowel mounted on single shaft instantly interchangeable by TURN-A-TROWEL.
BUILT-IN EASY CARRYING HANDLE
Slides into socket on gear box. Permits convenient lifting with both hands for moving around job.
Gas engine or electric motor mounting.
Convenient control with easy reading trowel pitch gauge, for setting all trowels at once with one quick variable adjustment.

Write for Catalog 952

MASTER VIBRATOR COMPANY • DAYTON 1, OHIO

Master Portable Generator Plants ½ KW to 100 KW

Master Vibratory Concrete Finishing Screed

Master Power-Blow Electric Hammer and Spade

Master Space Heaters

Master Gas or Electric Concrete Vibrators

MASTER

BETTER PRODUCTS FOR BIGGER PROFITS

OBITUARIES

Heaton R. Robertson, 72, retired engineer, died at Branford, Conn., May 9. He had retired three years ago after 30 years as chief engineer of the Connecticut Shellfish Commission. He was a 1904 graduate of Yale University. Until 1923 he was chief construction engineer of the N. Y., N. H. & Hartford R.R. He built the Providence, R. I., trolley tunnel.

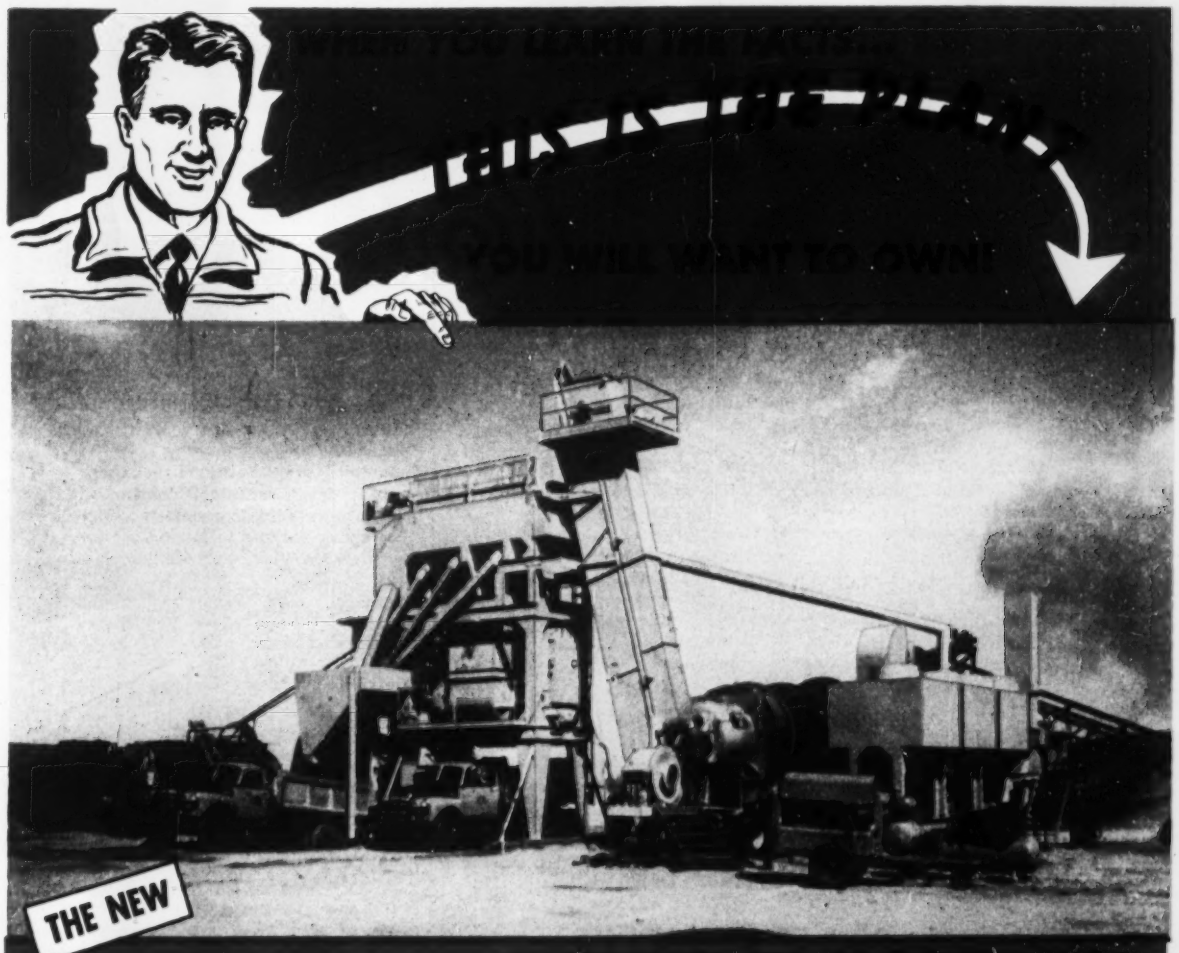
Dr. Edward H. L. Corwin, 67, internationally known authority on public health, died in N. Y. City May 8. A 1910 graduate of Columbia University, in the early Twenties he was in charge of the first comprehensive survey made of N. Y. hospital facilities. The report of this work was a standard book in its field. He wrote many others. He was an organizer of the International Hospital Association.

Adolph Teichert, Jr., 68, chairman and general manager of the A. Teichert & Son, Inc., construction firm of Sacramento, Calif., died May 5. He was one of the most widely known contractors in California. His firm was established in 1878. He became a partner after his graduation from the University of California in 1908 as a civil engineer. He served as president of the Associated General Contractors of America, Inc., in 1949.

D. Russell Born, 69, New Philadelphia, Ohio, civil engineer, of the Born & Born engineering and surveying firm, died recently. Formerly he was deputy Tuscarawas County engineer.

James J. Giles, vice-president of the W. H. Cooper Construction Co. Ltd., Hamilton, Ont., died April 30. He served for many years as general superintendent of all construction for the company, and supervised the erection of many large structures in the Hamilton district.

Montgomery B. Case, 71, engineer of construction for the George Washington Bridge and a number of other notable bridges, died in Englewood, N. J., May 7. He was a 1906 graduate of the University of Nebraska. Early in his career he was with the bridge-building firm of Ralph Modjeski as an expert on design and construction. He worked on the Delaware River suspension bridge at Camden, N. J. He was in charge of construction of the Philadelphia-Camden bridge from 1921 to 1927. In the last war he served the government as an adviser to the War Manpower Commission.



THE NEW

MADSEN

Study the features below . . . never before has a manufacturer of asphalt plants incorporated so many cost-saving, money-making advantages in one plant. MADSEN now gives you all these, **and more,** in the new MADSEN Model 481 Plant.

- **Oversize throughout . . . larger elevator, screen, bins, weigh-box, mixer and drives.**
- **Faster mixing cycle . . . all air-operation of bin gates, asphalt pressure injection and mixer gate, reduces operator fatigue which means added tonnage at the end of the day. Air controls are faster, more accurate, decreasing time cycle from bin to truck.**
- **New bin design (Patent Pending) . . . eliminates segregation, provides uniform aggregate withdrawal, promotes improved aggregate distribution in weigh-box.**
- **New weigh-box . . . oversize capacity, air-operated gate, 4-point lever suspension, roller-mounted so it may be quickly and easily rolled out of the way for field maintenance.**
- **New Model 440 Pug Mill (Patent Pending) by MADSEN . . . with externally removable sectional liners, ground to precision fit at the factory for complete interchangeability and no field fitting. Has improved mixing action, faster discharge, built-in oversize capacity, and is precision jig-built throughout.**
- **Improved drive arrangement . . . individual electric motors on hot stone elevator, vibrating screen, dust elevator, dust entering screw conveyor, pressure injection pump. Mixer may be driven by either electric motor or direct by Diesel.**
- **Generous use of adequate gearhead motor units . . . fully enclosed anti-friction bearing gear box on mixer drive.**
- **Madsen Pressure Injection System (Patent No. 1987243) . . . the asphalt is pumped into the mill in 5 to 7 seconds! . . . the fastest known method of placing every drop of asphalt into the mill.**

In all fairness to yourself . . . before you buy any asphalt plant, learn all the facts about the new MADSEN Model 481 Plant. You'll be glad you did.

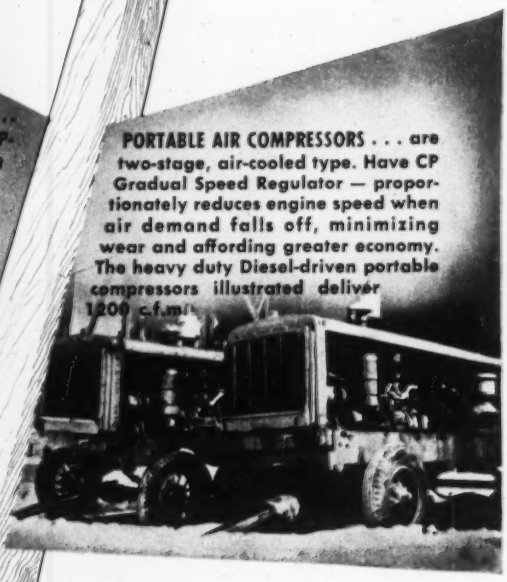
MADSEN

If you're interested in an asphalt plant, you owe it to yourself to get the complete story on the new MADSEN Model 481 Plant.

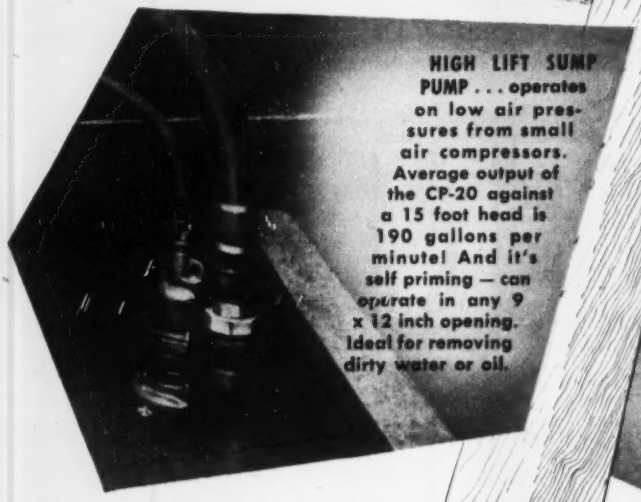
SHORTCUTS TO GREATER PROFITS

with CP equipment

LIGHTWEIGHT WAGON DRILL... combine the hard-hitting CP-50ND and the lightweight but rigid chassis of the G-150 Wagon Drill Mounting. They're an ideal combination for deeper holes, afford greater footage than with hand held sinkers. Chassis and full-sliding cone give adjustment to any drilling position. Can also mount CP-55.



PORTABLE AIR COMPRESSORS . . . are two-stage, air-cooled type. Have CP Gradual Speed Regulator — proportionately reduces engine speed when air demand falls off, minimizing wear and affording greater economy. The heavy duty Diesel-driven portable compressors illustrated deliver 1200 c.f.m.



HIGH LIFT SUMP PUMP . . . operates on low air pressures from small air compressors. Average output of the CP-20 against a 15 foot head is 190 gallons per minute! And it's self priming — can operate in any 9 x 12 inch opening. Ideal for removing dirty water or oil.

PORTABLE SLUDGE PUMP . . . widely used on dam jobs and similar construction projects—it handles water containing drill cuttings. No costly parts replacement due to abrasion—operates on ejector principle. Handles up to 15% solids.

Chicago Pneumatic 8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

BOOKS

TVA design practices

CIVIL AND STRUCTURAL DESIGN: Tennessee Valley Authority Projects—Technical Report No. 24, Volume 1. 439 pp. Superintendent of Documents, Washington 25, D. C. $2.

Here in concise form is a review of design methods and construction practices applied to the many civil engineering structures built by the Tennessee Valley Authority since it was first organized about 20 years ago. The value of this report for those interested in the design of dams and hydro power stations lies in the fact that the reasons back of the choice of a particular design or method of construction are stated.

For example, an account is given of the evolution in thinking concerning penstock design as the staff gained experience between the building of Norris Dam in the Thirties and the power plants of more recent years.

Structures are grouped by types—concrete dams and walls, locks, fill dams, powerhouses—to facilitate the presentation of design information in a logical manner.

Construction costs

ROCHE ESTIMATING METHODS—Estimating Construction Costs, Work Investigations and Reports—By W. Earle Roche. 704 pp. Published by the author at 128 Western Ave., Glendale 1, Calif. $100.

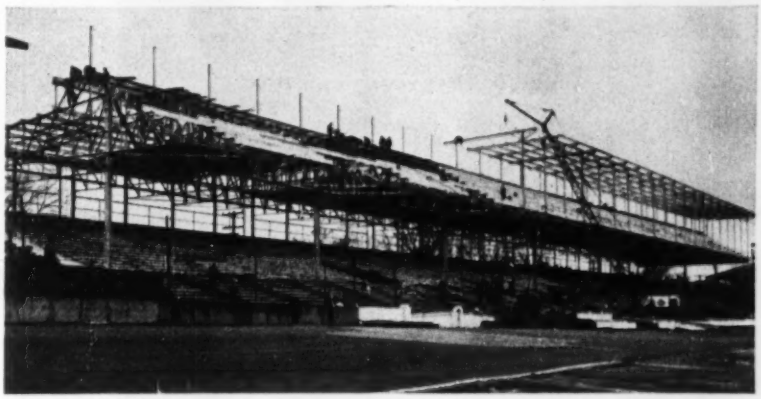
ESTIMATING CONSTRUCTION COSTS—By R. L. Peurifoy. 316 pp. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $5.50.

SHERLOCK'S BLUEBOOK OF ELECTRICAL ESTIMATING—120 pp. Estimating Handbook Associates, 1810 Pleasant St., De Kalb, Illinois. $7.75.

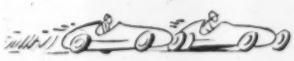
Mr. Roche's big book contains a vast amount of information on planning and organizing construction operations, construction plant, and on estimating what the cost of the many elements of construction work will be. It is based on the author's years of practical experience as a contractor and construction consultant. Included are sections on such diverse subjects as public relations, joint-venture agreements, and quantity surveys.

A large part of the book is given over to reproductions of forms developed by the author, filled out to show typical examples of how they are used. These cover such classifications as preliminary work reports, construction work programs, construction plant

THERE'S A LOT OF INTERNATIONAL STEEL IN THIS NATIONAL SPEED ARENA!



AT INDIANAPOLIS SPEEDWAY—



proving ground for men, motors and automotive advances—modernization has kept pace with the automobile industry's brisk progress. Numerous new grandstands and buildings have been added as needed, to accommodate ever-greater Memorial Day crowds. Many of the expanded and improved facilities incorporate steel framework and structural shapes supplied by International Steel. International's ability to fill the bill is best evidenced in repeat orders from the Indianapolis Speedway.

Probably your steel fabrication problems are a far cry from those of this famous arena of speed. But you'll gain a lot of laps toward an economical solution—however different or difficult the project—by outlining the details in a letter to International *today*.

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STRUCTURAL STEEL
INDUSTRIAL DOORS
REVOLVING DOORS
STEEL BUILDINGS

1950 EDGAR STREET
EVANSVILLE 7, INDIANA

when you want...

Plenty of Power...

full 133 drawbar H.P. with the lugging power stepping up as the engine slows down under load...power that keeps working on both tracks, even on turns.

Low Operating Costs...

no fuel wasting because power on both tracks means less power required on turns...balanced design eliminates cost of hauling unneeded "dead-weight."

Easy Operation...

finger-tip air steering and over-center clutch bar that cut operator fatigue to the minimum...permit virtually "one-hand" operation of the tractor—no "footwork."

Low Maintenance Costs...

Easy accessibility that means simpler, easier maintenance...power on both tracks at all times eliminates severe shocks and strains on gears...less loading on side frames.

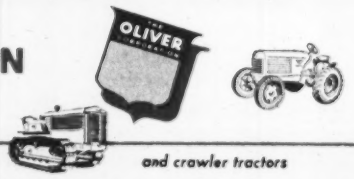
For complete information, see your Oliver Industrial Distributor or write for informative literature.

this is your tractor

the NEW OLIVER "OC-18"

THE OLIVER CORPORATION

400 W. Madison Street, Chicago 6, Illinois



a complete line of industrial wheel and crawler tractors

and general and indirect items.

Prof. Peurifoy's book is designed to give students an understanding of what items go into the preparation of estimates of the cost of constructing buildings, dams, highways, bridges and other structures in the field of civil engineering. To this end, considerable space is given over to an outline of how the principal construction operations are carried out. Emphasis in the book is on man-hours of labor involved in the operations described. Prices given are those current when the text was prepared.

An appendix contains a large table of the cost of owning and operating construction equipment, also tables of construction equipment rental rates and a depreciation schedule for construction equipment, which were published originally by Engineering News-Record.

The electrical estimating handbook covers labor costs only for installing all the principal items of electrical equipment of buildings such as cables, outlet and junction boxes, conduits, panels, switches and motors. All information is in tabular form. For example, under armored cables, the labor costs per foot of the principal sizes of cable are given for a range of labor rates from $1.25 per hour to $3.75. The tables cover both surface cables and cables embedded in concrete.

Reports and pamphlets

ASTM Specifications for Steel Piping Materials—American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $3.75.

The Workers' Story: 1913–1953—Labor Yearbook No. 2, United States Department of Labor. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 45¢.

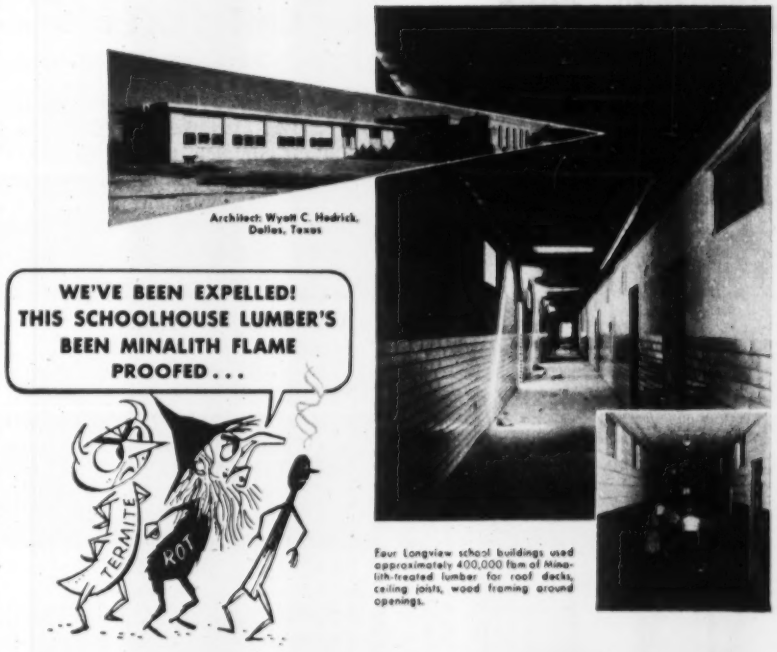
Highway Planning and Urban Development—Bulletin 64, Highway Research Board, Washington 25, D. C. 30¢.

Resealing Joints and Cracks in Concrete Pavement (Minnesota)—Bulletin 63, Highway Research Board, Washington 25, D. C. 45¢.

Highway-Materials Surveys—Bulletin 62, Highway Research Board, Washington 25, D. C. $1.50.

Traffic Assignment—Bulletin 61, Highway Research Board, Washington 25, D. C. $1.05.

Road-User Characteristics—Bulletin 60, Highway Research Board, Washington 25, D. C. 90¢.



Architect: Wyatt C. Hedrick, Dallas, Texas

Four Longview school buildings used approximately 400,000 fbm of Minalith-treated lumber for roof decks, ceiling joists, wood framing around openings.

How Longview, Texas, PROTECTS Its School Children and Its Tax Dollar Investment

When the citizens of Longview, Texas decided their community needed four new school buildings, they demanded absolute structural safety plus practical economy of design and construction. They also wanted long serviceability with minimum maintenance.

Wyatt C. Hedrick, well-known Dallas architect suggested a popular and economical method of construction—brick veneer supported by fire-retardant chemical-impregnated lumber.

Hedrick specified that lumber be pressure impregnated with Minalith.* Listed by Underwriters' Laboratories, Minalith also meets Federal Specifications for Fire Retardants. Wood treated with Minalith will not support combustion—it will char slowly where flame touches it, but will not ignite. During a fire, Minalith-treated lumber maintains its load bearing strength without sudden collapse. As a plus-value, Minalith protects wood from decay organisms and insect attack. And Minalith has no undesirable effects on lumber, keeps it clean for handling and completely paintable.

With Minalith-treated lumber readily available, local labor was able to proceed at once. Longview was pleased to note that use of local labor and local materials kept construction tax dollars at home.

Minalith-treated lumber is a product of American Lumber and Treating Company, who also produce Wolmanized* preservative-treated lumber. There are Wolman preservative treatment plants in all parts of the country. For further information write:

American Lumber & Treating Company

General Offices: 1601 McCormick Building, Chicago 4, Illinois

Offices: Little Rock, Arkansas • Portland, Oregon • Boston • Los Angeles San Francisco • Baltimore • New York • Jacksonville, Florida • Seattle

Producers of the Original

MINALITH *FLAME PROOFED LUMBER* a companion product to **Wolmanized** Lumber

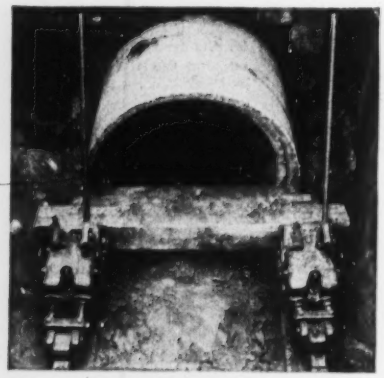
* Reg. U. S. Pat. Off.

SAVE HOURS,

CUT COSTS ON YOUR

PIPING JOBS

PUSH PIPE UNDER STREETS, TRACKS, walks, floors and other obstacles with a GREENLEE Hydraulic Pipe Pusher. One-man-operated, portable, simple to operate. No tearing up of pavement . . . eliminates extensive ditching, tunneling, back-filling, tamping, repaving. Cuts job time to a fraction. GREENLEE Hydraulic Pipe Pusher often pays for itself on first job. Two sizes—model shown above for pushing ¾ to 4" pipe. Larger unit, below, for pipe over 4", concrete sewer pipe and large drainage ducts. Power pump also available for extra ease and speed of operation.



GREENLEE

Write today for descriptive literature. Greenlee Tool Co., 2225 Columbia Avenue, Rockford, Illinois, U.S.A.

UNIT PRICES

Waterworks, Indiana

Four contracts totaling $1,619,719 were awarded to three contractors by the city of Logansport, Ind., for waterworks facilities including water mains; elevated storage tanks; a booster pump station; and a water treatment plant. Alfred LeFeber & Associates, Cincinnati, Ohio, are the engineers.

Wolf Construction Co., Logansport, lowest of three bidders, was awarded the $951,276 water treatment plant and low service pump station job. The plant, which can handle 6 mgd. contains a 7½-hp. flash mixer and two clarifiers providing three-hour detention at 6 mgd. Sludge is handled by a gravity flow to a sludge sump connected to the sewer.

Other parts include a 700 sq. ft. chemical storage room; filters; wash water equipment; and a filtered water storage well holding approximately 300,000 gal. for 80 minutes at 6 mgd.

Chlorine is to be received in 150-lb cylinders and stored in storage rooms. Two chlorinators will be provided, one for prechlorination and one for post chlorination. The present chlorinator is to be installed in the new plant. Space is also provided for fluoridation equipment.

The $241,170 elevated water storage tanks and reservoirs contract was awarded to Pittsburgh-DesMoines Steel Co., Pittsburgh, Pa., the second low bidder of four. The low bidder, Hammond Iron Works, Warren, Pa. was disqualified because of failure to submit a questionnaire.

Provision is made in the contract for three tanks with a total capacity of 725,000 gal; a 1,500,000 gal reservoir; and three years inspection and maintenance.

Minimum wage rates on the project are: bricklayers, $3.00 per hr; plasterers, $2.50 per hr; hod carriers, $2.025 per hr; and laborers, $1.825 per hr.

Bidders include:

Water treatment plant and low service pump station

1C Wolf Construction Co., Logansport, Indiana $951,276
2 Curry Const. & Supply Co., Bloomington, Inc. 970,435
3 Birmingham Const. Co., Birmingham, Mich. 1,071,965

Bids: 4-8-53 Item	Unit	Quantity	Unit Prices 1C	2
River control	ls	1	$16,082	$6,500
Repair & alter existing bridge	ls	1	6,702	7,000
Low service pump station (intake)	ls	1	36,483	38,000
Screens & trash racks				
Bar screen & trash rack	ls	1	.....	1,500
Traveling screen & appurt.	ls	1	7,839*	10,000
Preparation of site	ls	1	7,325	9,000
Outside sewers, drains, MH	ls	1	6,250	16,700
Outside water & gas piping	ls	1	22,384	21,000
Treatment plant building	ls	1	315,613	287,000
Inside piping & valves				
Pipe fittings & couplings	ls	1	66,859	88,000
Gate valves, sluice gates & floor stands	ls	1	18,785	20,000
Filter valves	ls	1	23,488	12,000
Cone check valves	ls	1	7,100	8,000
Check valves	ls	1	1,332	2,000
Surge relief valve	ls	1	921.00	550
Air release valves	ls	1	258.00	200
Pumps				
Low service pumps (2)	ls	1	6,512	8,000
High service pumps (2)	ls	1	20,528	23,000
Washwater pump (1)	ls	1	1,708	2,500
Duplex sump pumps	ls	1	1,260	1,500
Filter equipment				
Underdrains	ls	1	11,876	15,000
Filter media	ls	1	1,800	8,000
Wash troughs	ls	1	1,600	6,500
Filter rate controllers	ls	1	10,590	11,000
Loss of head & rate of flow gages	ls	1	3,784	4,500
Operating tables	ls	1	8,012	10,000
Filter bed agitators	ls	1	7,134	9,000
Liquid level controller	ls	1	6,827	7,000
Chemical feeders	ls	1	13,845	15,000
Chlorinating equipment	ls	1	.....	6,000
Ammoniating equipment	ls	1	9,559*	5,000
Fluoridation equipment	ls	1	6,177	5,000
Washwater rate controller meter & gage	ls	1	6,500	6,000
Meters				
Raw water meter	ls	1	4,932	5,000
Finished water meter	ls	1	8,055	8,500
Gages				
Clearwell depth gage	ls	1	752.00	1,000
Washwater tank level gage	ls	1	810.00	800
High service pressure gage	ls	1	585.00	1,000
Telemeters for distribution storage (2)	ls	1	1,260	2,000
Elevator	ls	1	14,200	14,000
Crane	ls	1	3,222	3,500
Water treating tanks & equipment				
Structures (tanks) & appurt.	ls	1	127,626	111,000
Flashmix equipment	ls	1	.....	3,000
Flocculator equipment (2)	ls	1	.....	17,000
Clarifier equipment (2)	ls	1	45,000*	30,000
Plumbing	ls	1	5,000	9,000
Heating	ls	1	14,900	14,000
Electrical work	ls	1	33,158	40,000
Painting	ls	1	20,100	6,500
Driveways	ls	1	2,600	3,500
Grading & seeding	ls	1	1,800	900
Foundations for washwater tank	ls	1	3,000	12,000
Laboratory & office equip	ls	1	4,400	4,400
Extra excavation	cy	100	2.50	3.00
Cl 1 extra concrete	cy	10	24.00	75.00
Cl 2 extra concrete	cy	10	23.00	71.00
Cl 3 extra concrete	cy	50	21.00	75.00
Extra reinf steel	lb	1,500	0.186	0.15
Sheeting left in place	mbm	10	250.00	80.00
Slag refill	cy	50	3.885	5.00

* Includes preceding items for which no price is given.

Elevated water storage tanks and reservoirs

1 Hammond Iron Works, Warren, Pa. $213,996
(no questionaire submitted—disqualified) 210,006*
2C Pittsburgh-Des Moines Steel Co., Pittsburgh, Pennsylvania 241,170
238,590*
4 W. E. Caldwell Co., Louisville, Kentucky 260,600
258,760*

Bids: 4-8-53 Item	Unit	Quantity	Unit Prices 1	2C
500,000 gal elevated tank & appurtenances	ls	1	$71,850	$74,900
125,000 gal elevated tank & appurtenances	ls	1	20,460	27,340
*75,000 gal elevated tank & appurtenances	ls	1	18,530	26,400
100,000 gal elevated tank & appurtenances	ls	1	22,520	28,980
Two 1,500,000 gal reservoirs & appurtenances	ls	1	97,166	107,900
3 yr service & inspection of maintenance on all tanks & reservoirs	ls	1	2,000	2,050

* Alternate

Continued May 28

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

Mass., East Boston—WATER DISTRIBUTION SYSTEM—B.A. 5/27—State, State Airport Management Bd., Fiscal Office, Station 21, Gen. Boutwell Bldg., Logan Airport, East Boston, constr. S.A.M.B. 73, furnish, constr. addns., to water distr. sys., South Hangar area, $150,000. Plans deposit $15, refundable. CD 4/13/48.

† **Maine and New Hampshire**—B.A. 5/29—U. S. Eng., 857 Commonwealth Ave., Boston 15, Mass., repairing riprap breakwater at Isles of Shoals, Me. and New Hampshire, CIVENG-19-016-53-37.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Daddario-Piatelli,** 73 Tremont St., Boston, Mass. LB $229,600, est. $300,000. repairing jetties and South Pier, Naval Shipyard, Spec. 36690, SOUTH BOSTON, MASS. First Naval Dist., 495 Summer St., Boston, Mass. Bids May 5. CD 4/17.

BUILDINGS

LOW BIDS AND CONTRACTS

McMillan Co., Inc., 17 Main St., Keene, N.H. LB $726,757, est. $650,000. HOSPITAL addn., alterations, BELLOWS FALLS, VT. Rockingham Hospital Assoc., Supt. Office, Westminster Terrace, Bellows Falls, Vt. Bids May 5. CD 4/13.

▲ **George A. Fuller Co.,** 11 Beacon St., Boston, Mass. CA Est. $1,000,000. AUDITORIUM, CAMBRIDGE, MASS. Massachusetts Institute of Technology, 77 Mass. Ave., Cambridge, Mass. Elial Saariren, Bloomfield, Mich., archt. Anderson & Beckwith, 11 Beacon St., Boston, Mass., assoc. archts. CD 3/25.

Thomas Mulcare Corp., 66 Western Ave., Allston, Mass. CA Est. $250,000. candy MANUFACTURING BLDG. addn., alterations, CAMBRIDGE, MASS. Deran Confectionery Co., Inc., 134 Cambridge St., Cambridge, Mass. CD 4/22, under CA.

A. & P. Corrugated, Box Corp., 250 Canal St., Lawrence, Mass. Owner Builds. $500,000. paper MILL addn., alterations, 250 Canal St., LAWRENCE, MASS. CD 5/6.

Marlen Constr., Inc., 16 Norwich St., Worcester, Mass. Owner Builds. $300,000. 25 RESIDENCES, WEST BOYLSTON, MASS. CD 5/7.

▲ **Giordano Constr. Co.,** 287 Main St., Branford, Conn., LB, $1,371,200, MR-52 moderate rental housing, Incl. 124-units, off Chamberlain Heights, MERIDEN, CONN. Meriden Housing Auth., 7 Gale Terrace, Meriden, Conn. Bids May 5. CD 5/1.

▲ **Edwin Moss & Son,** 555 Grant St., Bridgeport, Conn., CA, $6,000,000, EQUIPMENT BLDG., Orange and Wall Sts., NEW HAVEN, CONN. Southern New England Telephone Co., 227 Church St., New Haven, Conn. Bids Apr. 30. CD 4/15.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

N. Y., East Islip—B.A. 5/29—Long Island State Park Comn. at Admin. Headquarters, Belmont Lake State Park, Babylon, water supply sys. at Heckscher State Park, Suffolk Co. S. M. Shapiro, c/o owner, ch. engr.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,
Daniel G. Lanni Co., Inc., 5 Rowley St., Rochester 7, N. Y., LB. $97,694, est. $103,000. repairs and painting Northumberland Bridge 0.1 mi. R. C. 53-35, Washington and Saratoga Counties;

Bates & Rogers Constr. Corp., 600 W. Jackson St., Chicago, Ill., LB. $2,823,845, est. $2,976,000, Rochester City: Inner Loop (Genesee River) Bridge and approaches 0.36 mi., FAGC. 53-11, Monroe Co. Bids May 7. CD 4/15.

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,
Charles F. Vachris, Inc., 9024 Ditmas Ave., Brooklyn, 36, N. Y., LB. $2,449,740, est. $3,150,000. 0.47 mi. Major Deegan Expressway, Cont. 7A, FA. MDE. 53-3, Bronx Co.;

Dan Bar Contg. Co., 220 Pulawski St., and **W. E. O'Neil Constr. Co.,** Wilson Bldg., Syracuse, N. Y., LB. $1,491,039, est. $1,768,000, New York State Thruway, Mohawk Sect., Sub. 8B and Ontario Sect. Sub. 8A (Electronic Parkway and Thompson Rd.); 2 interchanges; 4 access roads, Syracuse-Bridgeport, Pt. 1, S.H. 672, 1.57 mi. Thy. 5.01 mi. Acc., M.T. 53-8, O.T. 53-8, S.T. 53-20, R.C. 53-36, Onondaga Co.;

Peter Kiewit Sons Co., 61 Broadway and **The Arthur A. Johnson Corp.,** 374 Madison Ave., New York 17, N. Y., LB. $6,776,098, est. $7,412,000. New York State Thruway, Mohawk Sect. Sub 8 (Whitesboro-Utica West City Line); Woods Rd.; Mohawk St., C. R. 107 and Special Drive. 4.03 mi. Thy. 1.11 mi. Acc., M.T. 53-7, S.T. 53-19, Oneida Co.;

Louis Longhi & Son, Inc., Box 580, Glens Falls, N. Y. LB. $742,397, est. $790,000. City of Johnstown, Rt. 148 By-Pass (Chestnut St. to E. Main St. and Briggs St. to E. City Line); Fonda-Johnstown, SH 5096, 2.87 mi. FAC. 53-10, FARC. 53-30, Fulton Co.;

Asphalt Roadways Co., 1766 Main St., Buffalo 8, N. Y. LB. $397,480, est. $452,000, Grand Island State Parkway South Parkway Extension (Beaver Island State Park) 2.8 mi. GISP. 53-1, Erie Co.;

D. W. Winkelman Co., Inc., Heffernan Bldg., Syracuse, N. Y., LB. $876,889, est. $945,000, New York State Thruway, Ont. Sect. Sub. 12, Rochester East-Rte. N.Y. 96 Interchange; Willow Rd.; Pittsford-Victor, Pt. 2, S.H. 8223, 1.1 mi. Thy., 4.26 mi. Acc., O.T. 53-7, S.T. 53-18, R.C. 53-34, Ontario Co.;

John Arborio, Inc., W. Cedar St., Poughkeepsie, N. Y. LB. $2,963,844, est. $3,497,000, Palisades Interstate Parkway, Sect. 2 and Pt. 1, Coyles Cors.-Short Cove, S.H. 9005, Valley Spring-Mount Ivy, S.H. 1019, 5.05 mi. Pwy., 4.18 mi. Acc., PIP. 53-1, R.C. 53-29, Rockland Co.; LB. $10,447,244, est. $12,504,000, New York State Thruway, Catskill Sect.-Sub. 5 (Newburgh-New Paltz, Pts. 1 and 2); 1 Interchange; 10 access roads; Cochecton Turnpike Pt. 1, S.H. 113; Newburg-Shawangunk S.H. 161; Plattekille-Modena, S.H. 307, 16.52 mi. Thy., 7.88 mi. Acc. C.T. 53-9, S.T. 53-21, R.C. 53-37. Orange and Ulster Counties;

Hornell Constr. Corp., Hornell, N. Y., LB. $144,019, est. $172,000. Coopers Plains-Monterey, C.R. 26, 0.25 mi., FASS. 53 4. Steuben Co. Bids May 7. CD 4/15.

▲ **PENNSYLVANIA**—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg,
James D. Morrissey, Inc., 9119 Frankford Ave., Phila., Pa., CA. $5,385,322, structures, grading, drainage, paving 4.16 mi. Sect. 33B, Delaware River Exten. of Turnpike, Montgomery Co.; and constr. structures, grading, drainage, paving 3.44 mi. Sect. 33C, Delaware River Exten., Bucks Co. Bids Apr. 28, awarded May 7. CD 4/30, under LB.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg,
H. J. Williams Co., Inc., Sumner St. and W. M. R.R., York, Pa. CA. $3,570,540. U.S. 111 in Conewago and Newberry Twps., constr. another sect. of Harrisburg-York-Baltimore Expressway consisting of 5.93 mi. divided hy. on relocation from west of Manchester to northwest of Newberrytown, proj. to be reinf.-con. pavement 24 ft. wide on each side of concrete and earth divisor area variable 4 to 20 ft. wide, incl. 3 structures, 1 arch over tributary of Conewago Creek, over tributary of Little Conewago Creek, deck plate girder bridge over Conewago Creek, 1 concrete deck I-beam bridge over TR 24, grading, drainage, variable 84 ft. to 88 ft. wide, York Co. CD 4/29, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Gardens Constr. Co., Inc.,** 2406 Greenmount Ave., Baltimore, Md. CA $3,983,000, est. $2,500,000. brick, block, concrete, limestone Carver Vocational High SCHOOL, Prestman and Bentalou Sts., BALTIMORE, MD. City, Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore, Md. CD 5/5, under LB.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **N. C., Edenton**—BARGE FUEL FACILITIES—B.A. 5/26—Dist. P. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va., barge fuel facilities at U. S. Naval Auxiliary Air Station, NOY 75699, Spec. 35854. Plans deposit $10.

† **N. C., Edenton**—B.A. 5/26—Dist. P. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va., dredging at wharf and boathouse at U. S. Naval Auxiliary Air Station, NOY 75698, Spec. 35843. Plans deposit $10.

BIDS ASKED—BUILDINGS

† **N. C., Camp Lejeune**—STORAGE—B.A. 5/26—P. Wks. Office, Bldg. No. 1005, Marine Barracks, Storage Bldg. No. 780 addn., NOY 77109, Spec. 36566. Plans deposit $10.

S. C., Beaufort—SCHOOL—B.A. 5/26—School Dist. 1, Beaufort, elementary school. $300,000, Halsey & Cummings, 4 Broad St., Charleston, archts.

Ga., Columbus—SCHOOL—B.A. 6/15—Muscogee Co. Bd. Educ., Court House, Project 16-M, elementary school addn., $651,000. Aeck Assocs., 140 Peachtree St., Atlanta, archts. CD 6/26/50.

SOON LETS CONTRACT—BUILDINGS

Ga., Savannah—DEPARTMENT STORE—Levy's Inc., Abrercorn and Broughton Sts., soon lets contract, department store addns., alterations. $500,000. Levy & Kiley, 520 Realty Bldg., archts. CD 10/14.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

M. G. Aldridge, 1048 Patterson St., Macon, Ga. LB $110,643, Div. 2;
G. E. Moore Co., Greenwood, S. C. LB $328,321, Div. 3, sanitary sewer imprvs., AIKEN, S. C. City, Aiken, S. C. Bids May 5. CD 4/10.

City, City Hall, Jacksonville, Fla., rejected bids Apr. 30, rock fill dike along St. John River, JACKSONVILLE, FLA. LB, $219,511. CD 5/7, under LB.

▲ **Joe Reinertson,** 2047 N.W. 7 Ave., Miami, Fla., CA, $1,205,264, Section A;
Powell Bros., 14 S.W. 1 Ave., Fort Lauderdale, Fla. CA, $1,042,247, Section B, sanitary sewerage imprvs., KEY WEST, FLA. City, City Hall, Key West, Fla. Bids May 6. CD 3/23, under LB.

M. R. Thompson, P. O. Box 1847, Montgomery, Ala., LB, $307,675, 2 water supply tunnels, TUSCALOOSA, ALA. City, City Hall, Tuscaloosa, Ala. Bids May 5, CD 4/10.
C. N. Mason, 1711 North D St., St. Petersburg, Fla. LB $285,270, sewerage collection sys.;
Red River Constr. Co., P. O. Box 3132, Queensborough Station, Shreveport, La. LB $137,510. Sewage treatment plant, JENA, LA. Town, Jena, La. Bids May 4. CD 4/28.

BUILDINGS

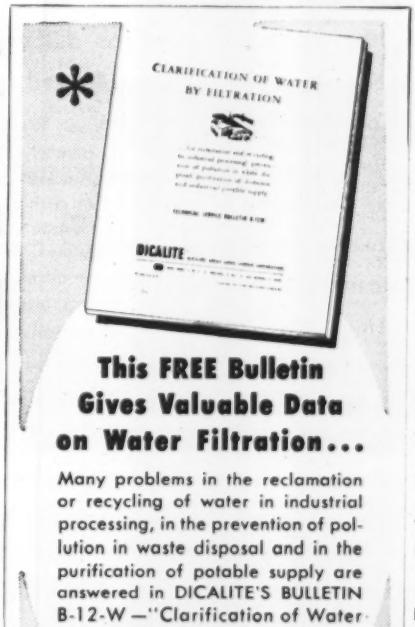
LOW BIDS AND CONTRACTS

H. W. Ivey Constr. Co., 3224 Peachtree Rd. N.E., Atlanta, Ga., LB, $978,376, Washington Elementary High SCHOOL and Blakely-Union Elementary-High School, BLAKELY, GA. Early C. Bd. Educ., Blakely, Ga. Bids May 6. CD 4/13.

Mathis Constr. Co., Lumpkin St., Athens, Ga., CA, $509,980, high SCHOOL, GIBSON, GA. Glascock Co., Gibson, Ga. Bids Apr. 28. CD 5/4, under LB.

▲ **Chatham Co. Hospital Auth.,** Court House, Savannah, Ga., cancelled bids to have been opened May 27 HOSPITAL, SAVANNAH, GA., $4,000,000. CD 4/21.

(Continued on page 85)



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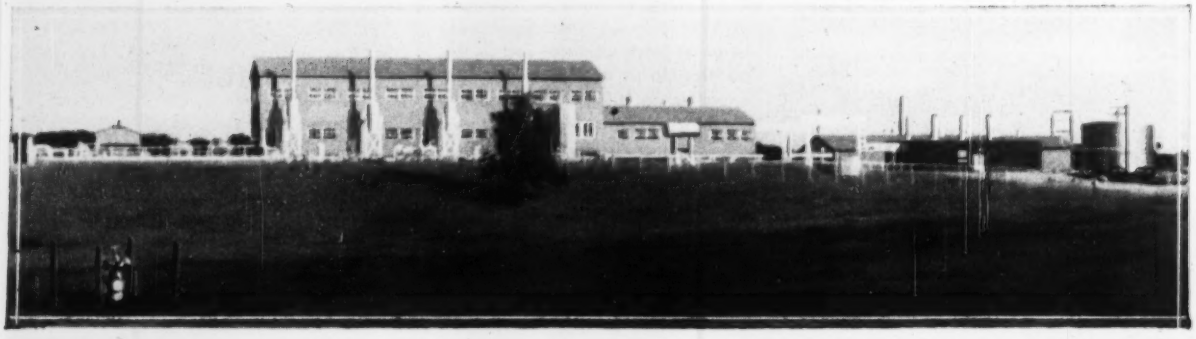

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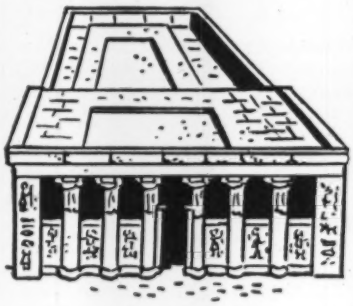

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(Continued from page 83)

▲ **Daniel Constr. Co. of Alabama,** 822 7 Ave. S. Birmingham, Ala., LB, $1,990,273 Senior High SCHOOL, TUSCALOOSA, ALA. City, City Hall, Tuscaloosa, Ala. Bids May 5. CD 3/24.

J. E. Pyle, P. O. Box 1679, Little Rock, Ark. CA $541,049. HOSPITAL, PICAYUNE, MISS. Lucius O. Crosby Memorial Hospital, Picayune, Miss. CD 5/4, under LB.

Day Constr. Co., Grenada, Miss. CA $373,580. PLANT for American Paper Tube Co., PORT GIBSON, MISS. Town, Port Gibson, Miss. CD 4/10, under LB.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

† O., Apco—BARRICADE—B.A. On Or About 5/27—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., constr. barricade for Bldg. No. G-8, Load Line No. 4 at Ravenna Ordnance Plant, Eng-46-022-53-47.

BIDS ASKED—BUILDINGS

Ill., Skokie—FORGE SHOP—B.A. 5/27—Mathias Klein & Son, 3200 Belmont St., Chicago, 109,000 sq. ft. forge shop, $750,000. Wright Martin & Assocs., 161 Green Bay Rd., Wilmette, archts.

O., Toledo—SCHOOL—B.A. 6/3—Bd. Educ., Wm. E. Hallauer, bus. mgr., Southard Ave., Scott High School addn., gymnasium-auditorium, $600,000. Plans deposit $15, Sanzenbacher, Morris & Taylor, 538 N. Erie St., engrs.-archts. CD 12-11.

▲ O., Youngstown—HOSPITAL—B.A. 6/9—St. Elizabeth Hospital, Sister M. Adelaide, supt., 1044 Belmont Ave., 7 story addn. and remodel present hospital. $3,500,000. Schmidt-Garden & Erikson, 7435 W. Talcott St., Chicago, Ill., archts.-engrs. CD 2/23/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Ohio Tar & Asphalt Co., 3059 21 St. SW, Canton, O. CA $141,027. top dressing 133 mi. various country roads, LISBON, O. Comrs. Columbiana Co., Court House, Lisbon, O. Awarded May 4. CD 4/19/51.

D. Webb & Co., and H. & H. F. Hosea Co., 6267 Broadway, Cincinnati, O. CA $196,000, est. $226,000. sewage treatment plant, NEW LEBANON, O. City, Mayor Charles Cook, New Lebanon, O. Bids Apr. 6. CD 3/18.

Riley & Cook Co., 3653 Bowe St., Toledo, O. LB $132,496. concrete;

Schoen Asphalt Paving Co., 310 S. Westwood St., Toledo, O. LB $133,914. asphalt, paving, wid'n. Navarre Ave. between Woodville St. and Toledo Belt R.R., TOLEDO, O. City, City Hall, Toledo, O. Bids May 5. CD 4/29.

▲ Bd. P. Wks., City Hall, Elkhart, Ind., rejected bids Apr. 21, Div. 1, interceptor sewers, LB, $597,880; Div. 2, LB $584,552. ELKHART, IND. CD 5/4, under LB.

▲ ILLINOIS—State Div. Hys., Springfield,
Orr Constr. Co., 27 E. 19 Pl., Chicago Heights, Ill., CA, $966,118, c.conc. 9.56 mi. U. S. 66, Logan Co.;

Eric Bolander Constr. Co., Winchester Rd., Libertyville, Ill., CA, $943,441, c.conc., bit. resurf., c.conc. base course wid'n., 1 bridge 7.46 mi. U.S. 30, Whiteside Co.;

O'Connor Constr. Co., 320 Reisch Bldg., Springfield, Ill., CA, $1,104,929, c.conc. 9.56 mi., bridge, culvert exten., U.S. 66, Logan and Sangamon Counties;

Lewis Shaw, 1800 N. 22 St., Decatur, Ill., CA, $554,523, bit. on grav. or crushed stone base course 7.05 mi. FA 38, Brown and Pike Counties;

Leon B. Stilley Constr. Co., Golconda, Ill., CA, $619,518, c.conc. base course wid'n., conc. base course, bit. resurf., 1 culvert, 1.5 mi. U.S. 51 Pulaski and Alexander Counties. Bids Apr. 24, awarded May 6. Grand total, $4,188,529. CD 4/28, under LB.

Rockford Black Top Constr. Co., 1615 Westchester Dr., Rockford, Ill. LB, $101,382, grading, drainage, base, sub-base, bit. surf. taxiways, service drives, sidewalks and curbs, Rockford Airport, ROCKFORD, ILL. Greater Rockford Airport Auth., Rockford, Ill. Bids May 4. CD 4/29.

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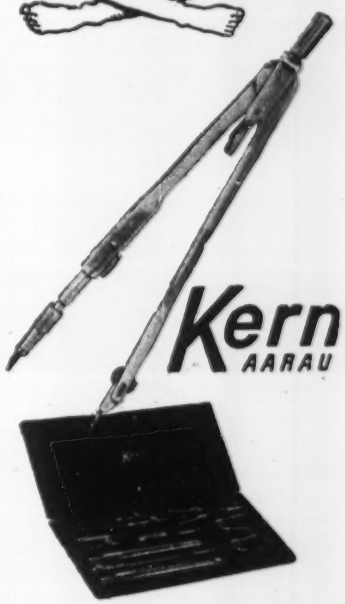

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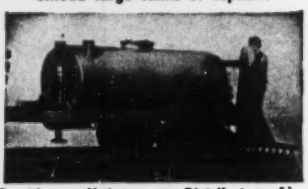

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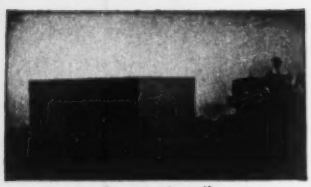

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BUILDINGS

LOW BIDS AND CONTRACTS

† **Midwest Piping Co.**, 1450 S. 2 St., St. Louis, Mo. CA Est. $425,000. furnish prefabricated piping assemblies for one of process bldgs. for GASEOUS DIFFUSION PLANT (Subcontractors under Peter Kiewit Son's Co., P.O. Box 268, Portsmouth, O.) for Atomic Energy Comn., 1901 Constitution Ave. N.W., Wash. 25, D. C., PIKETON AND WAKEFIELD, O. CD 8/13/52, under CA.

Arthur G. McKee & Co., 2300 Chester Ave., Cleveland 14, O. CA $200,000. continuous naptha and kerosene treating PLANT at No. 1 Refinery, CLEVELAND, O. Standard Oil Co. of Calif., Midland Bldg., Cleveland 1, O. Awarded May 6.

▲ **Charles V. Maescher & Co.**, 2106 Florence Ave., Cincinnati, O. CA Est. $1,000,000. 240x350 ft. concrete, brick, steel MANUFACTURING BLDG. for corrugated paper boxes, Jefferson Ave. at New York Central R.R., SHARONVILLE, O. River Raisin Paper Co., Inc., Monroe, Mich. Cordes & Pressler & Assoc., 4935 Paddock Rd., Cincinnati, O., engrs.-archts. Awarded May 6.

Frank Burke & Son, 35 S. Dearborn St., Chicago, 3, Ill., LB, $828,494, 2 story, bsmnt., brick elementary SCHOOL, 3810 W. 81 Pl., CHICAGO, ILL. Bd. Educ., 228 N. La Salle St., Chicago, 1, Ill. Bids May 1.

Wm. E. Schweitzer Co., 2207 Dodge Ave., Evanston, Ill., LB, $614,728, OFFICE, EVANSTON, ILL. Rotary International, Ridge Ave. and Davis St., Evanston, Ill. Bids Apr. 29. CD 4/17.

▲ **Kal Builders Co.**, 4554 N. Broadway, Chicago, Ill. Owner Builds. $1,000,000. 90 HOMES, LANSING, ILL. Frank Lapasso, 8 S. Dearborn St., Chicago, 3, Ill., archt. Awarded Apr. 29.

▲ **North Lake Cement Co.**, c/o Wolf Rd. and North Ave., North Lake City, Ill., CA, $7,000,000. 500 HOMES in Leyden Twp. MELROSE PARK, ILL. Chicago Title & Trust Co., Chas. Reskin, North Lake City, Ill. A. J. Del Bianco, 5501 Irving Park Rd., Chicago, Ill., archt. Awarded Apr. 26.

▲ **James McHugh Constr. Co.**, 6449 S. South Park Ave., Chicago, Ill., CA, $3,300,000, MOTHER HOUSE, NOVITIATE, bit. paving, WHEATON, ILL. Franciscan Sisters, Roosevelt Rd., Wheaton, Ill. Awarded May 5/4. C. J. Smith & Co., 317 N. 11 St., St. Louis, Mo., engrs. CD 3/24.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

Kan., Russell—B.A. 5/26—City, R. E. Boxberger, clk., WW imprvs. Wilson & Co., 223 N. Santa Fe St., Salina, engrs. Plans deposit $20. CD 11/26.

† **Tex., El Paso**—REPAIR SHOP—B.A. 5/28—U. S. Eng., Box 1538, Albuquerque, N. M., main bldg., 2 story, 144x168 ft. masonry constr., armament electronics (KI) radio and instrument repair shop, Biggs Air Force Base, Inv. No. Eng 29-005-53-134. Plans deposit $50. Extended date. CD 4/22.

† **Colo., Denver**—BARRACKS, etc.—B.A. 6/4—U. S. Eng., 1709 Jackson St., Omaha, Neb., rehabilitation barracks and mess halls, Lowry Air Force Base, Inv. 25-066-53-154. CD 8/17/51.

† **North Dakota**—B.A. On Or About 6/4—U. S. Eng., Fort Lincoln, P. O. Box 300, Bismarck, Rtes. 1, 3, 3A, 18, 18A and 18B Fort Berthold Indian Reservation Roads located in Eastern Segment of Fort Berthold Indian Reservation, west of Garrison, south of Parshall, CIVENG-32-015-53-60.

† **South Dakota**—B.A. 6/11—U. S. Eng., 1709 Jackson St., Omaha, Neb., powerhouse crane, Gavins Point Reservoir Proj., Yankton, Inv. 25-066-53-245.

† **Tex., Laredo**—MAINTENANCE SHOP—B.A. 6/18—U. S. Eng., Box 1229, Galveston, base maintenance shop, link trainer, service club, Laredo Air Force Base, Inv. No. Eng 41-243-53-79. $500,000-$1,000,000. Extended date. CD 4/21.

BIDS ASKED—BUILDINGS

Tex., Littlefield—COURT HOUSE—B.A. 6/10—Lamb Co., Otha A. Dent, judge, Littlefield, court house. $525,000. Plans deposit $50. Atcheson & Atkinson, Sanford Bldg., 1009½ Texas Ave, Lubbock, archts. CD 10/1/52.

† **N. M., Los Alamos**—FABRICATION FACILITY—B.A. 6/16—U. S. Atomic Energy Comn., Los Alamos Field Office, c/o Ch. Procurement Sec., Los Alamos, fabrication facility TA-3, Proj. "S", steel frame weighing 600 tons, fdn. and partial bsmnt. of poured concrete, ext. wall of prefabricated insulated steel or aluminum panels. Inv. No. 291-53-8. $300,000-$500,000. Extended date. CD 3/30.

▲ **Tex., Dallas**—HOTEL—B.A. 6/30—Hotel Statler, c/o Arthur F. Douglas, pres., 7 Ave. and 33 St., New York, N. Y., 900-room hotel. $10,000,000-$18,000,000. Wm. Tabler, c/o owner, engr. CD 4/16.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul,

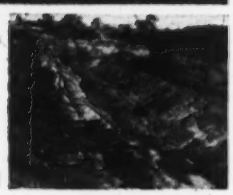
J. W. Craig Co., 1814 California St. N. E., Minneapolis, MINN. CA $173,661. grav. base, plant-mixed bit. surf. 12.7 mi. between Salol and Warroad, Roseau Co. Bids Apr. 17. CD 4/1.

J. W. Craig Co., 1814 California St. N. E., Minneapolis, Minn. CA $108,586. grav. base, road-mixed bit. base 27.2 mi. LITTLE FALLS, MINN. Morrison Co., L. J. Billstein, aud., Little Falls, Minn. Bids Apr. 21. CD 3/25.

P. Lametti Constr. Co., 615 Drake St., St. Paul, Minn. LB $743,922. sanitary sewers, RICHFIELD (MINNEAP-

(Continued on page 89)

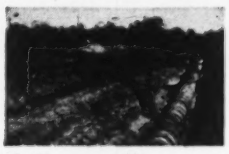
WET JOBS



Whether it's

HEAVY CONSTRUCTION

BUILDINGS



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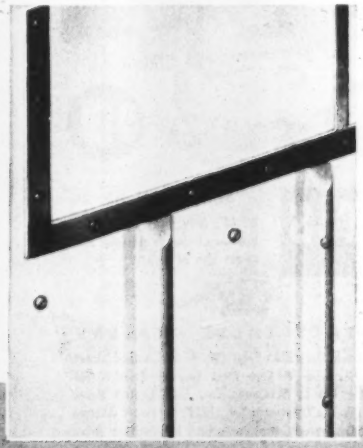

A snug fit that keeps out driving rain, snow and dust around windows and at the building base is assured by Butler cor struction. Deep-formed corrugations in Butler galvanized steel or aluminum sheets are specially crimped to fit snugly against building base and window frames. Butler pre-engineering assures fast, easy, low-cost field erection—and also assures 100 percent reuse of materials for building expansion or removal to a new location.

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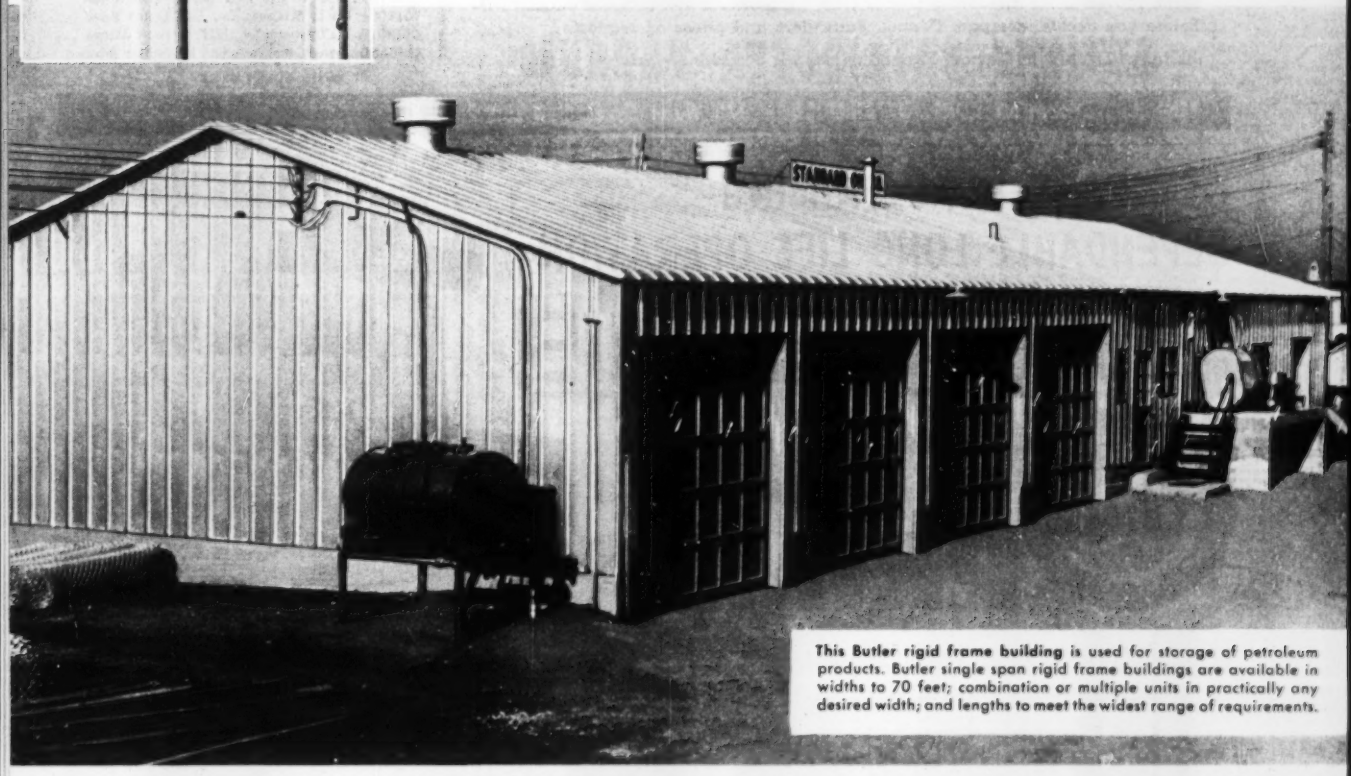
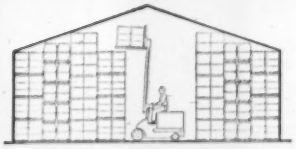


This Butler rigid frame building is used for storage of petroleum products. Butler single span rigid frame buildings are available in widths to 70 feet; combination or multiple units in practically any desired width; and lengths to meet the widest range of requirements.



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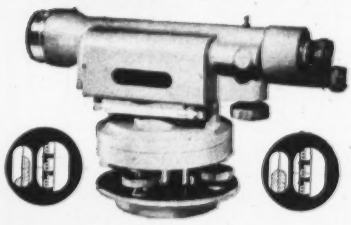

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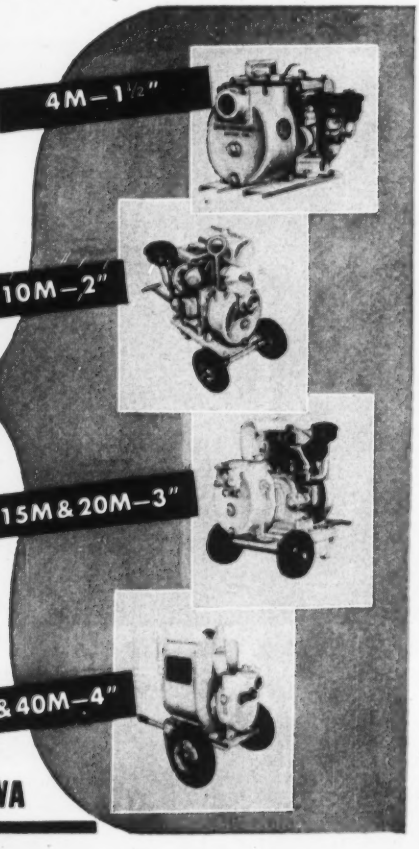

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CONSTRUCTION MACHINERY COMPANY • WATERLOO, IOWA

(Continued from page 86)

OLIS P. O.), MINN. Village, P. H. Haugen, clk., Richfield, Minn. Bids May 4. CD 4/15.

M. T. & J. T. McGuire, Algona, Ia., CA, **$130,898,** grading;

Christensen Bros., 3011 Virginia St., Sioux City, Ia., CA, **$60,661,** culverts, CHEROKEE, IA. Cherokee Co. Cherokee, Ia. Bids Apr. 14. L. W. Casey, Cherokee, Ia., co. engr.

B. L. Anderson, 327 Guaranty Bldg., Cedar Rapids, Ia., CA, **$221,651,** surfacing, VINTON, IA. Benton Co., Vinton, Ia. Bids Apr. 21.

Riley & Stiers Constr. Co., 4905 Delmar Blvd., St. Louis 8, Mo. LB **$115,162.** Sects. 1, 2 and 4, c. water intake structure, 12 m. g. reservoir, low service pump house, 200 GPM treatment and filter plant, 8,750 lin. ft. 2- to 6-in. c.i. mains, appurtenances, SWEET SPRINGS, MO. City, Sweet Springs, Mo. Bids Apr. 23. CD 4/3.

† **Murphy & Smestad Constr. Co.,** Fargo, N. D. LB **$520,719,** Fort Berthold Indian Reservation roads, Rte. 11, 20, 22, Fort Berthold, Inv. 32-015-53-32, NORTH DAKOTA. U. S. Eng., Fort Lincoln, Box 300, Bismarck, N. D. Bids Apr. 23. CD 3/3, under LB.

TEXAS—State Hy. Comn., Austin,

Ernest Loyd, P.O. Box 1120, Fort Worth, Tex., CA **$506,009,** flexible base, hot mix b. conc. paving and Hy O/P 3.789 mi. Hy US 82, 84, SH 290. Proj. F 502 (13) and F 1104 (1), Lubbock Co. Bids Apr. 15, awarded Apr. 23. CD 4/22, under LB.

▲ TEXAS—State Hy. Comn., Austin,

McKown & Sons, P.O. Box 785, Austin, Tex., CA **$704,982,** flexible base, surf. tr. and hot mix b. conc. 8.336 mi. Hy. U. S. 81, Proj. FI 200 (14), Travis Co.;

F. M. Reeves & Sons, P.O. Box 972, Austin, Tex., CA **$1,364,620,** grading, structures, sewers, flexible base, ASCP bridge, etc. Proj. U 514 (12), Harris Co. Bids Mar. 17, awarded Mar. 24. CD 3/24, under LB.

▲ TEXAS—State Hy. Comn., Austin,

Austin Bridge & Austin Contg. Co., P.O. Box 1590, Dallas, Tex., CA **$1,005,816,** flexible base and hot mix b. conc. 16.078 mi. Hy. U. S. 82, Proj. F. 549 (6), Grayson Co. Bids Mar. 18, awarded Mar. 24. CD 3/26 under LB.

Lone Star Gas Co., 1915 Wood St., Dallas, Tex., Force Account. **$170,000,** 27.72 mi. gas lines gathering sys. in Worsham fields in Wise Co., Chico area, TEXAS. CD 9/22/52.

Lone Star Gas Co., 1915 Wood St., Dallas, Tex., Own Forces, **$128,000,** 60 mi. addnl. field gas gathering lines, in SE Sect. of Jack Co.; **$65,000,** loading racks, facilities for marketing casinghead gasoline, Jacksboro, TEXAS. CD 4/13.

Central Power & Light Co., 120 N. Chaparral St., Corpus Christi, Tex., Force Account. **$150,000,** constr. addnl. underground electric cable lines, CORPUS CHRISTI, TEX.

Gulf Bitulithic Co., Box 2572, Houston, Tex., CA **$274,000.** reservoir work, incl. levee, discharge siphons, emergency spillway and diversion works, FREEPORT, TEX. Dow Chemical Corp., Freeport, Tex. Lockwood & Andrews, 904 Union Natl. Bank Bldg., Houston, Tex., engrs. CD 5/9/52. under Industrial Buildings.

Link Belt Co., Box 2563, Houston, Tex., LB **$140,097.** Contr. 5, sewage treatment plant, furnaces and appurtenances to form fertilizer base;

Muhl Electric Co., 719 W. 9th St., Houston, Tex., LB **$148,500,** Contr. 4, electric power and wiring for treatment plant, GALVESTON, TEX. City Galveston, Tex. Bids Apr. 28. CD 3/23.

Meents, Larsen & McIlyar, Box 6582, Alamo Heights, San Antonio, Tex., CA. **$833,923,** Contr. 2, interceptor sewer, lift station and force main, GALVESTON, TEX. City, Calveston, Tex. Bids Apr. 28. CD 3/23.

City, West, Tex., Purchase and Hire, **$39,100,** drilling and developing Trinity Sand Water Supply Well, WEST, TEX. Joe J. Rady & Co., 697 City Hall, Galveston, Tex., engr.

BUILDINGS

LOW BIDS AND CONTRACTS

Kileen & Wille Constr. Co., 1402 Poplar Ave., Superior, Wis. CA **$426,183.** General contract grade SCHOOL and grade SCHOOL addn., BEMIDJI, MINN. Bd. Educ., W. F. Bender, clk., Bemidji, Minn. Bids Mar. 17. CD 2/3.

▲ **Bolling Builders,** 103 W. 73 St., Kansas City, Mo. Owner Builds. **$3,000,000.** HOUSING DEVELOPMENT, incl. 20 houses, shopping center, 57 acre site, GLADSTONE, MO.

Chas. F. Curry Real Estate Co., 921 Baltimore St., Kansas City, Mo. Owner Builds. **$300,000.** 2 story, bsmnt., 22,000 sq. ft. STORE, KANSAS CITY, MO. Stephen C Kenney of Edw W. Tanner Assoc., 310 Ward Parkway, Kansas City, Mo., archts. Edw. Keith, Inc., c/o Edw. Keith, pres., lessee. Awarded Apr. 30.

▲† **Utah Construction & C. H. Leavell & Co.,** Box 1451, El Paso, Tex., CA, **$2,274,464,** major and minor CALIBER BLDGS., Spec. 33427, SHUMAKER, ARK. Dpt. Navy, Bldg. 16, Dpt. P. Wks. Office, New Orleans, La. Bids Feb. 27. CD 2/27, under LB.

Sheridan Village Shopping Center, 512 S. Cheyenne St., Tulsa, Okla. Owner Builds. **$500,000.** 2 story, 150x427 ft. and 125x150 ft. SHOPPING CENTER for 20 shops, TULSA, OKLA. McCune & McCune, 1308 S. Utica St., Tulsa, Okla., archts.

Cowdin Bros., 411 S. Haskell St., Dallas, Tex. CA **$428,000.** Transportation SERVICE CENTER, incl. shop, and automotive repair garage, DALLAS, TEX. Dallas Power & Light Co., Dallas Power & Light Co.

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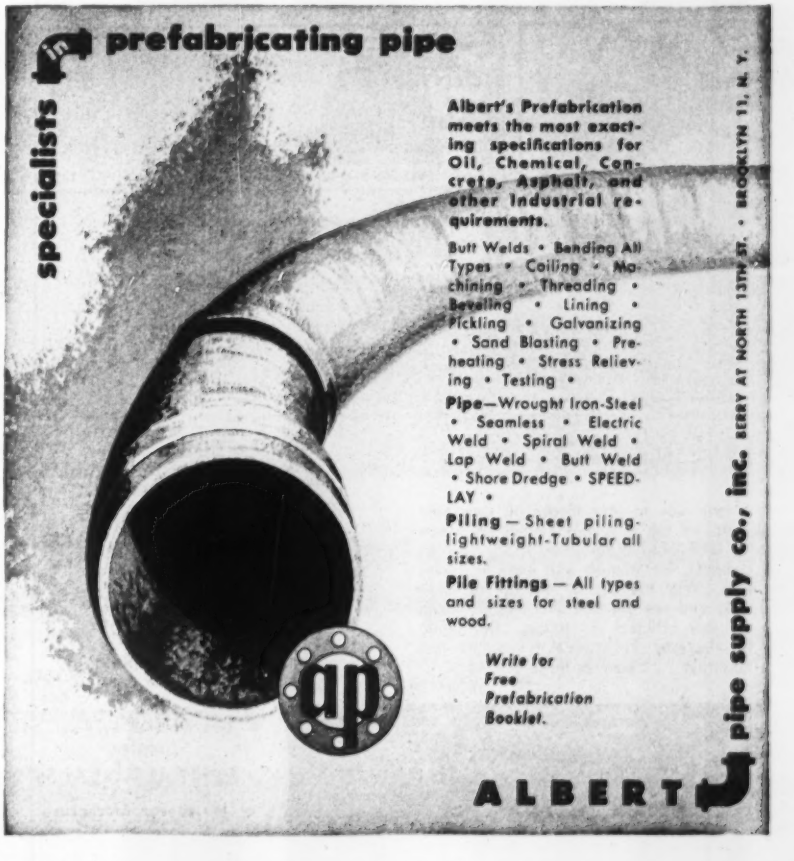
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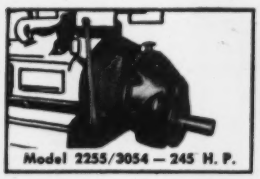

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Model 2275/3175 — 730 H. P.

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Bldg., Dallas, Tex. Harwood Smith & Jos. M. Mills, Mercantile Bank Bldg., Dallas, Tex., archts. CD 3/22/51.

Cadenhead & Rosser, 4776 Trail Lake Dr., Fort Worth, Tex., LB $300,000, 2 story, 80x229 ft. and 58x68 ft. ART MUSEUM at Will Rogers Memorial Grounds, FORT WORTH, TEX. City, City Hall, Fort Worth, Tex. Bids Apr. 30. CD 4/23.

Marvin W. Henry, Contractor & Builder, 3106 Randall St., Houston, Tex., CA. $329,175, 38 DWELLING units, HOUSTON, TEX. Marvin W. Henry & Assoc., 3106 Randall St., Houston, Tex. CD 12/21/51.

FAR WEST

BIDS ASKED—BUILDINGS

† **Ariz., Tuba City**—HOSPITAL—B.A. 6/9—Bureau Indian Affairs, Dpt. Interior, Interior Bldg., 19 and C Sts. N.W., Wash., 25, D. C., 1 story, 75-bed hospital.

SOON LETS CONTRACT—BUILDINGS

Calif., Torance—LABORATORY, etc.—Union Carbide & Carbon Corp., Carbon & Carbon Chemical Div., 2770 Leonis Blvd., Los Angeles, soon lets contract 8,800 ft. laboratory, 33,600 sq. ft. shop, pipe storage shelter, shipping bldg. and 14,400 sq. ft. office, $500,000. Quinton Engineers Ltd., 816 S. Figueroa St., Los Angeles, engrs.

HEAVY CONSTRUCTION

BIDS ASKED—HEAVY CONSTRUCTION

▲ **S. Morgan Smith Co.,** York, Pa., LB, $4,197,524, six 100,000 h.p. hydraulic turbines for Chief Joseph Dam, Bridgeport, Inv. 53-60, WASHINGTON. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids May 6. CD 3/25.

▲† **T. C. Bateson Constr. Co.,** Irwin-Keasler Bldg., Dallas, Tex., LB, $3,529,541, est. $4,048,592 double cantilever maintenance hangar, Fairfield Air Force Base, Inv. 53-99, SPOKANE, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids May 8. CD 4/22.

† **Ferranti Electric, Inc.,** 30 Rockefeller Plaza, New York, N. Y. LB $857,600. six 56,500 kva main unit transformers for Units 11 thru 14 at McNary Power House, Inv. 53-87, OREGON. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids May 5. CD 4/8.

BUILDINGS

LOW BIDS AND CONTRACTS

Rugger & Foster, 2421 "L" Ave., National City, Calif., LB, $447,197, Johnson Ave. Elementary SCHOOL, EL CAJON, CALIF. Cajon Valley School Dist., 303 Roanoke St., El Cajon, Calif. Clyde Hufbauer, 1975 Fifth Ave., San Diego, Calif., archt.

Loring & Co., 860 8 Ave., San Diego, Calif., LB $469,000, classroom bldg. and administration bldg. at Southwest Junior High School, NATIONAL CITY, CALIF. Sweetwater Union High School Dist., 2800 Highland Ave., National City, Calif. Bids Apr. 30. Kistner, Curtis & Foster, Spreckles Bldg., San Diego, Calif., engrs. CD 11/7/51.

E. Goettling & Sons, 2911 S. Chandler St., Tacoma, Wash., CA, $300,000, rein.-con. CHURCH, OLYMPIA, WASH. First Methodist Church, Olympia, Wash. D. W. Edmundson & N. R. Kochendoerfer, Henry Bldg., Portland, Ore., archts.

Soule Steel Co., 3010 1 Ave., Seattle, Wash., Day Labor, $400,000, steel frame, steel fabricating PLANT and WAREHOUSE, SEATTLE, WASH. H. A. Hovind & Assocs., 1213 Westlake Ave. N., Seattle, Wash., archts.

Shoreline School District, 412 N. 137 St. and Roosevelt Way, Seattle, 33, Wash., rejected bids Feb. 12, Olympic Hills Elementary SCHOOL, SEATTLE, WASH. LB $328,996. CD 2/18, under LB.

City, City Hall, Tacoma, Wash., rejected bids Apr. 13, SHOP bldg. for Light Division, TACOMA, WASH. LB, $437,000. New bids May 11. CD 4/17, under LB.

▲ **Lindgren & Swinerton,** 605 W. Olympic Blvd., Los Angeles, Calif., CA, $2,000,000, rein.-con., FACTORY and OFFICE, ANAHEIM, CALIF. Delco-Remy Div. General Motors Corp., 2401 Columbus Ave., Anderson, Ind. CD 12/17.

(Continued on page 93)

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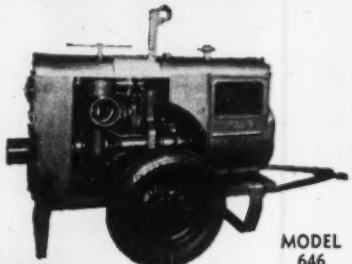
A sure way to save money on your next wellpoint job is to get Foundation's new 4" 1000 GPM capacity pump . . . sturdy, compact, for medium and small wellpoint jobs. Why use big 6" and 8" pumping units and pay big fuel bills when you can use this efficient 4" pump, tailor-made for the job? Economical to operate and maintain . . . easy to move around.



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4" unit powered by 4-cyl. gas engine

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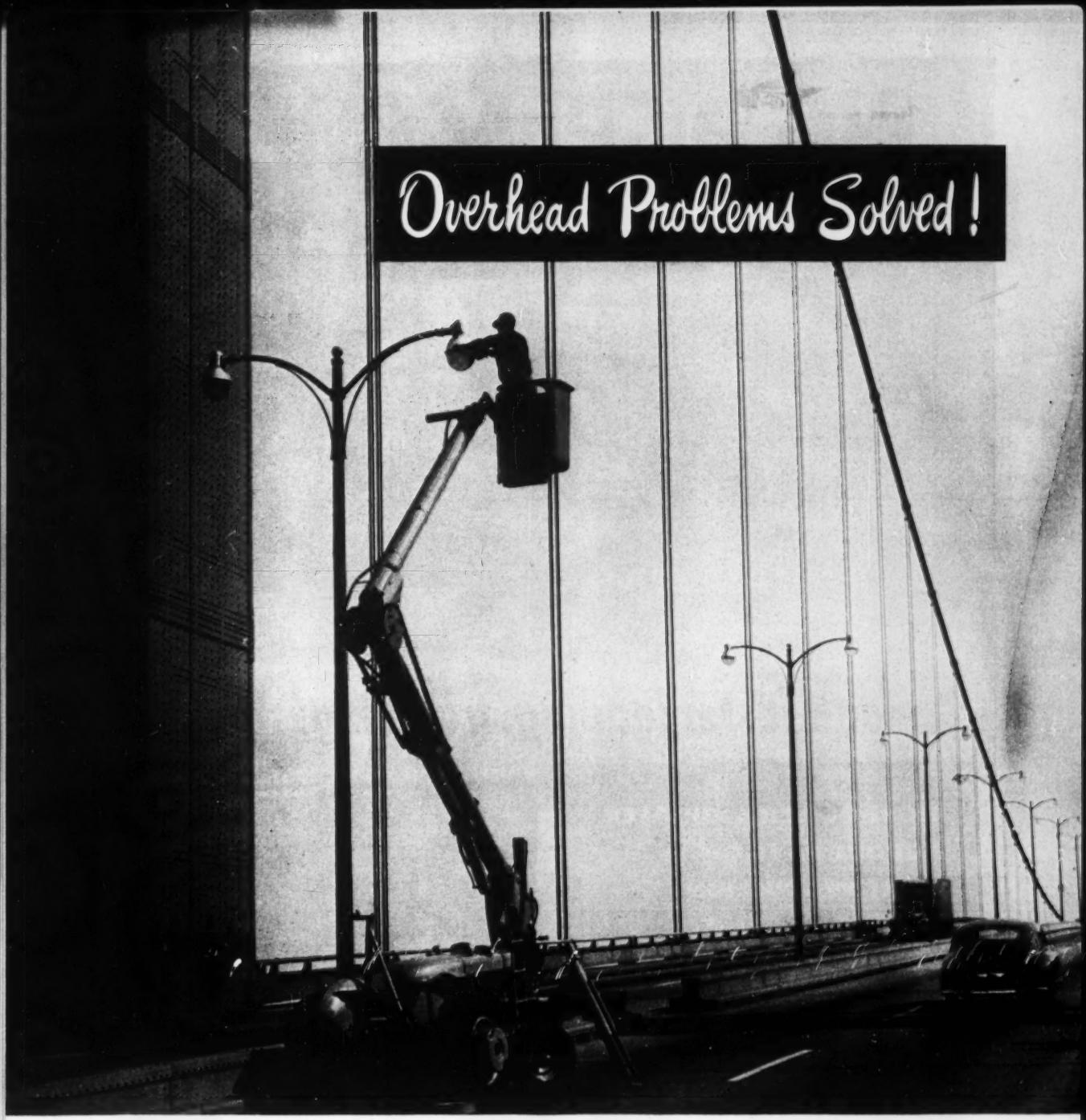

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This package includes a:

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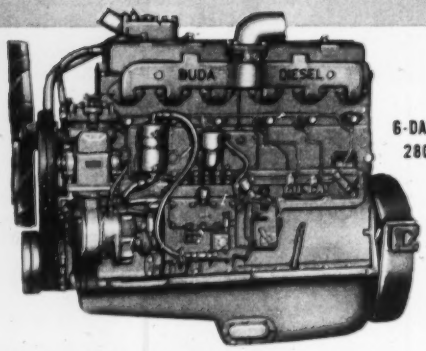
MORE POWER... GREATER TORQUE PAYS OFF IN MORE PRODUCTION FROM EVERY UNIT



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280 HP at 2100 RPM

The *extra* piston displacement in Buda Dyna-Swirl Diesels gives your equipment more power and higher torque . . . resulting in more trips per hour and lower costs per yard of dirt moved. Buda Diesels are heavy duty workhorses—built to stand up to tough service . . . to keep delivering maximum horsepower with less maintenance and downtime.

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COAST TO COAST
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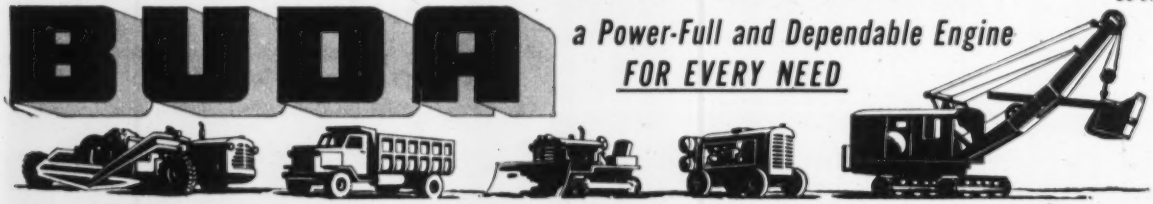
a Power-Full and Dependable Engine
FOR EVERY NEED



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"No Other Rope Even Comes Close to Comparing with Tuffy Scraper Rope"

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*By*_____ *Title*_____

*Address*_____

*City*_____ *Zone*___ *State*_____

C-8

(Continued from page 90)

CANADA

BUILDINGS
LOW BIDS AND CONTRACTS

▲ **G. W. Golden Constr. Ltd.**, 8925 82 Ave., Edmonton, Alta., Owner Builds, $4,000,000, APARTMENT Project, at Westbound sub-division, EDMONTON, ALTA.

C. Duranceau Ltd., 2545 Jacques Hertel St., Montreal, Que., CA, $700,000, 2 story, 60x680 ft. concrete, brick SHED, for use as bonded warehouse, MONTREAL, QUE. Canadian National R. R., R. O. Stewart, ch. engr. 360 McGill St., Montreal, Que. Bids Apr. 15, CD 4/1.

ALASKA

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

▲† **Lytle & Green and S. Birch & Sons**, Securities Bldg., Seattle 1, Wash., LB. $2,665,520, est. $2,591,107. 50x178 ft. steel frame addn. to CENTRAL HEATING and POWER PLANT, install new equip., ENG-95-507-53-58 Elelson Air Force Base, ALASKA. U. S. Eng., 3013 Arcade Bldg., Seattle 1, Wash. Bids May 6. CD 4/29.

▲† **Morrison-Knudsen Co., Inc.**, 319 Broadway, Boise, Idaho. CA $1,432,292. 2 warehouses at Elmendorf Air Force Base, Inv. 53-51, ALASKA. U. S. Eng., Anchorage, Alaska. CD 4/23, under LB.

Proposed Projects

WATER SUPPLY

▲ **Kan., Salina**—City, voted $1,000,000 bonds Apr. 7, soft water treatment plant. Wilson & Co., 223½ Santa Fe St., Salina, consult. engrs.

SEWERS, WASTE DISPOSAL

▲ **Ala., Mobile**—City, City Hall, additional storm sewers, $3,500,000.

▲ **Ga., Savannah**—City, City Hall, West Side Interceptor Sewer, $500,000; storm sewers in Avondale, $275,000; sanitary sewers imprvs. in 65, E. Broad and Bolton Sts., etc. $750,000. Wiedeman & Singleton, P.O. Box 1878, Atlanta, and Thomas & Hutton, 20 E. Bay St., Savannah, consult. engrs. CD 3/13.

▲ **Ind., Indianapolis**—Bd. Sanitary Comrs., Clarence T. Drayer, chn., City Hall, Zone 4, sewage and garbage disposal plant. $3,000,000; interceptor sewers, Mars Hill District, $275,000. Russell B. Moore & Assocs., 810 N. New Jersey St., Zone 4, consult. engrs. CD 9/25/47.

BRIDGES

▲ **Md., Baltimore**—City, Bureau Hys., 303 Municipal Bldg., O'Donnell Street Viaduct to carry O'Donnell St. over and under railroad tracks east of Conklin to Oldham St. $4,000,000. Robertson & Assoc., 339 St. Paul Pl., consult. engrs. James H. McKay, c/o owner, hy. engr. CD 10/21/43, under Streets and Roads.

▲ **O., Cincinnati**—City, City Hall, elimination of grade crossing at Mitchell and Clifton Aves. and B. & O. R. R., $4,000,000; Third St. Viaduct Extension over Eggleston Ave., $3,835,000. T. J. Montgomery, city engr.

STREETS AND ROADS

▲ **WEST VIRGINIA**—State Road Comn., 1800 Washington St. E., Charleston,
Kanwaha Co.—relocating, grading, c. conc. MacCorkle Ave., Patrick St. Bridge to C. & O. Ry. Station, new approach to S. Side Br., traffic interchange N. end of Patrick St. Bridge and Hys. 35 and 21, overpass N.Y.C. R.R. in connection with city of Charleston, $7,000,000.

EARTHWORK, WATERWAYS

▲ **Calif., Gilroy**—South Santa Clara Valley Water Conservation Dist., Gilroy, voted $3,667,000 bonds, water supply system. CD 3/30.

▲ **Tex., Lindale**—Town, C. J. Boyd, Mayor, voted bonds, 30,000 acre ft. of water earthen and concrete type lake and dam, near Tyler, $1,000,000. J. M. Lloyd & Assocs., Tyler, Tex., consult. engrs. CD 3/18.

PUBLIC BUILDINGS

▲ **Calif., Hanford**—SCHOOL—Hanford Union High School District, Hanford. $1,500,000 bond election June 23, high school addns. Extended bond election date. CD 4/23.

▲ **Calif., Los Angeles**—CONVENTION CENTER—City, City Hall, $27,000,000 bond election May 26 convention center. CD 1/3/51.

Calif., Rosemead—SCHOOLS—Rosemead Elementary School Dist., 3640 Rio Hondo St., voted $988,247 bonds, Muscatel School, addns. to Wells, Marshall and Encenita Schools. CD 4/18/52.

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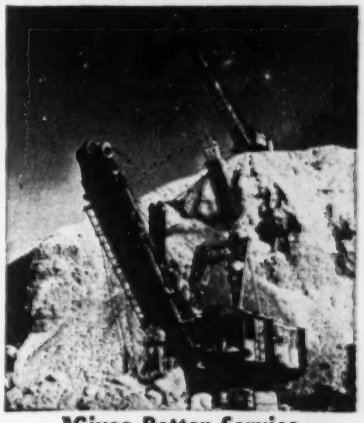

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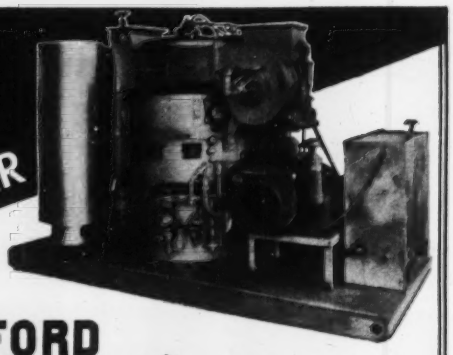

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▲ **Conn., West Hartford**—SCHOOL—Town, Supt. Schools, 51 Memorial Rd., plans by Nichols & Butterfield, 998 Farmington Ave., New South End Elementary School, $1,298,000. CD 1/30.

▲ **Conn., Woodbridge**—SCHOOL—Regional School Bd., c/o G. A. Means, chn., Woodbridge, plans by Fletcher-Thompson, Inc., 211 State St., Bridgeport, Regional High School, off Newton Rd. $1,500,000.

▲ **Ga., Atlanta**—HOSPITAL—Fulton-De Kalb Hospital Auth., 36 Butler St. S.E., plans by Robert & Co. Associates, 96 Poplar St. N.W., hospital, $20,000,000.

▲ **Ill., Granite City**—City, City Hall, voted bonds Junior High School, 2 grade schools, physical education bldg., school imprvs. $3,850,000. CD 2/9.

▲ **Ind., Merrillville**—SCHOOL, etc.—Ross Twp. School Bldg. Corp., 57 and Chase Sts., Gary, high school and gymnasium, $1,000,000.

† **Md., Aberdeen Proving Ground**—LABORATORY—U.S. Eng., 24 St. and Maryland Ave., Baltimore, plans by Jack S. Steele, 1300 W. Hunting Park Ave., Phila., Pa., laboratory for acceptance test proof facilities, $800,000.

▲ **Md., Towson**—SCHOOL—Baltimore Co. Bd. Educ., Aigburth Rd., plans by Hopkins & Burton, 10 E. Mulberry St., Baltimore, Sussex Elementary School, Essex. $1,000,000. Morris R. Baker, c/o owner, engr.

Mich., Ferndale—SCHOOL—City, 21204 Woodward St., defeated $850,000 bonds Apr. 27, school, Ferndale School Dist. CD 3/27.

▲ **Mich., Mount Pleasant**—SCHOOL—Bd. Educ., $1,200,000 bond election May 26, high school.

▲ **Miss., Clarksdale**—PLANT—City, plans by R. W. Naef, Masonic Bldg., Jackson, plant for American Hardware Corp. $1,750,000. CD 4/14.

Mo., Jefferson City—SCHOOLS—Bd. Educ., c/o A. L. Crou, supt., 224 E. Miller St., voted $850,000 bonds, schools, Marshall & Brown, 114 W. 10 St., Kansas City, Mo., archts. Harland Batholomew, 919 Louderman Bldg., St. Louis, Mo., consult. engr. CD 4/14.

▲ **N. C., Mount Airy**—HOSPITAL—City, hospital, $1,500,000.

▲ **N. C. Gastonia**—SCHOOL IMPRVS—Gaston Co. Bd. Educ., Gastonia Court House, cancelled bond election of May 23, school imprvs. $6,000,000. CD 3/9.

▲ **O., Dayton**—HOUSING—Dayton Metropolitan Housing Auth., Harries Bldg., 300-low-cost rental housing units, Mc Call St., 2 blocks east of Gettysburg Ave. $3,500,000.

▲ **Pa., Harrisburg**—OFFICE—Dpt. Property & Supplies, State Capitol, office bldg. for State Bureaus of Motor Vehicles and Highway Safety. $3,000,000.

Pa., West Chester—HOSPITAL—Chester County Hospital, West Chester, plans by E. William Martin, 830 West St., Wilmington, Del., hospital addn., alterations $850,000. CD 11/22/44.

▲ **Wis., Janesville**—COURT HOUSE—Rock Co. plans by Carl Lloyd Ames, 3505 W. Center St., Milwaukee, Zone 10, 3 story, 50x180 ft. and 50x100 ft. court house addn. $1,005,942.

COMMERCIAL BUILDINGS

▲ **Ark., Little Rock**—HOSPITAL—Arkansas Baptist Hospital, 1700 W. 13 St., plans by Erhart, Eichenbaum & Rauch, Wallace Bldg., hospital addn. $1,500,000. CD 11/26.

▲ **Ark., Little Rock**—OFFICE—National Old Line Insurance Co., c/o Yandell Johnson, 113 W 9 St., office bldg. $1,000,000.

Calif., Los Angeles—APARTMENTS—Substantial Homes Ltd., 2960 Wilshire Blvd., plans by R. L. Wilson, 3672 Grayburn Rd., Pasadena, five 2 story apartments, Los Feliz Blvd. $932,500.

▲ **D. C., Wash.**—RESIDENTIAL UNITS—Bush Constr. Co., Flat Iron Bldg., Norfolk, Va., residential units in 8 story elevator apartments and low-rent dwellings 27-acre sites, $9,000,000. Milton J. Prassars, 5915 Massachusetts Ave., archt.

▲ **D. C., Wash.**—HOMES—S & S Building Corp., 2424 59 Place, Cheverly, Md., plans by Arthur W. Pitts, 5820 15 St., N. Arlington, Vt., 1,500 semi-detached and detached homes, apartment units, Branch Ave. and St. Barnabas Rd. S.E., Marlow Heights, $18,000,000 CD 8/21.

▲ **Fla., Coral Gables**—DORMITORY—University of Miami, 1200 Campo Sano Ave., plans by Robert M. Little, 2180 Brickell Ave., Miami, dormitory, $1,500,000.

▲ **Ga., Atlanta**—COMMUNITY CENTER—Atlanta Jewish Community Center, c/o Alexander & Rothschild, archts., 316 Peachtree St., N. E., community center, $1,000,000.

▲ **Ga., Atlanta**—MASONIC TEMPLE—Atlanta Masonic Temple Co., Henry Grady Bldg., plans by Cooper, Bond & Cooper, Henry Grady Bldg. masonic temple, $1,800,000.

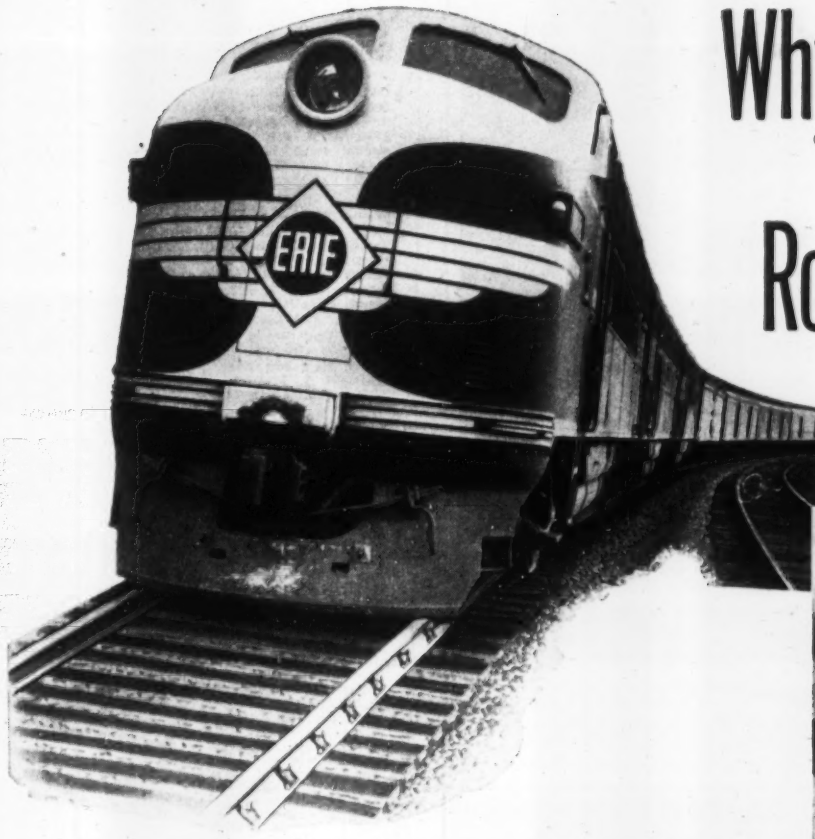
▲ **Ill., Chicago**—POLICE TRAFFIC OFFICE—Reid Murdock Co., Div. of Consolidated Grocers, 135 S. La Salle St., plans by Paul Gerhardt Jr., city archt., City Hall, multi-story wholesale grocery to be remodeled for Police Traffic Office, 325 N. La Salle St. $1,000,000.

▲ **Ind., Franklin**—HOSPITAL—Masonic Orders of Indiana, Franklin, hospital addn. at Masonic Home $1,000,000.

Me., Ellsworth—HOSPITAL—Eastern Memorial Hospital, Ellsworth, plans by Curtin & Riley, 45 Newbury St., Boston, brick hospital, $800,000.

(Continued on page 96)

Why Run a Train ON Road Forms?



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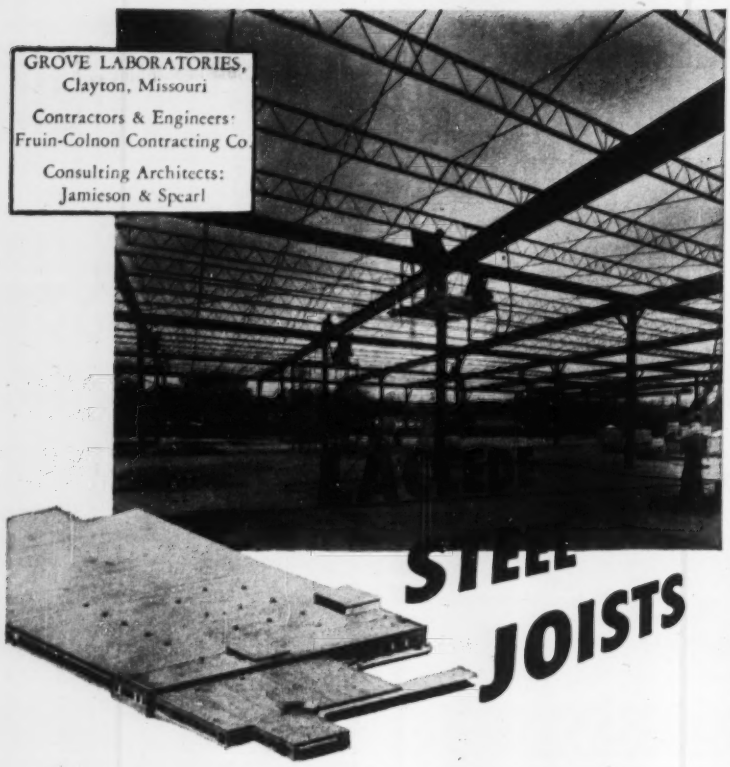

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(Continued from page 94)

Md., Baltimore—HOUSES—Morton Macht, 11 E. Fayette St., plans by L. A. Menefee, 347 N. Charles St., one hundred and nine 2 story, 21x34x28 ft., brick houses, 1600 block Northbourne Rd., 4000 and 4100 blocks Dudley and Belfern Aves. $825,000.

▲ **Md., Landover Hills**—DEPARTMENT STORE, ETC—Community Shopping Centers, Earl S. Harwood, 5200 Annapolis Rd., Landover, plans by Corning & Moore, 1726 M. St. N.W., Wash., D. C., department store, medical center, office, shopping center at Glenridge between Annapolis Rd. and Glenridge Dr. $4,000,000.

▲ **Mich., Ann Arbor**—HOSPITAL—St. Joseph Mercy Hospital, Ann Arbor, 7 story, brick, steel, concrete hospital addn. $5,000,000.

▲ **Mo., Kansas City**—DORMITORIES—University of Kansas City, 5100 Rockhill Rd., Kansas City, Mo., plans by E. W. Tanner & Assoc., 310 Ward Parkway, Kansas City, Mo., women's dormitory, $500,000; plans by Hardy & Schmacher, Scarritt Arcade Bldg., Kansas City, Mo., men's dormitory, $1,000,000.

▲ **N. J., Ellisburg**—HOTEL, etc.—Eugene Mori & Garden State Racing Assn., P.O. Box 311, Camden, hotel and shopping center in Delaware Twp., near Garden State Race Track. $4,000,000. Arthur Froehlick, 383 S. Robertson Blvd., Los Angeles, Calif., archt. for hotel.

▲ **N. Y., New York**—RESEARCH INSTITUTE—Columbia University, 11 St. and Broadway, 9 story College of Pharmacy and drug Research Institute, $5,000,000.

▲ **O., Toledo**—APARTMENTS—Glass City Constr. Co., 2616 W. Central St., 86-unit apartment proj. off Anthony Wayne Trail between Marengo Dr. and Sherwood Ave. $1,000,000. Stepleton, McDonnell & Barber, Colton Bldg., consult. engrs.

▲ **Tex., Lake Jackson**—DWELLINGS—E. F. Fillip Constr. Co., 6701 F St., Houston, 30 frame, masonry dwellings, concrete slab fdn., $300,000; 32 frame, stone dwellings, concrete slab fdn., $320,000; 43 frame, brick trim dwellings, concrete slab fdn., $430,000; 39 frame dwellings, concrete slab fdn., $390,000; 35 frame dwellings, concrete slab fdn., $350,000; 48 brick dwellings, concrete slab fdn., $480,000, in new sect. of Parkwood Terrace.

▲ **N. B., Moncton**—HOSPITAL WING—Sisters of Charity, Hotel Dieu Hospital, Moncton, 80-bed nursery department hospital wing and nurses residence. $1,000,000.

▲ **Ont., Brantford**—HOSPITAL—Sisters of St. Joseph, St. Joseph's convent, 300 John St. S., Hamilton, plans by Somerville, McMurrick & Oxley, 1104 Bay St., Toronto, hospital, $1,000,000.

▲ **Ont., Toronto**—APARTMENT BLOCK—James F. Crothers, 96 Cheltenham Ave., plans by Gordon S. Adamson, 906 Yonge St., 8 story, 66-unit, apartment block, Rosedale Valley Rd. $1,000,000.

▲ **Ont., Toronto**—APARTMENT BLOCK—Reuben R. Dennis, 25 Kilbarry Rd., plans by J. E. Hoare Jr. 481 Eglinton Ave. W., 12-story, 274 unit apartment block, Yonge St. and Cheritan Ave. $2,000,000.

INDUSTRIAL BUILDINGS

▲ **Ala., Calera**—PLANT—American Brake Shoe Co., 230 Park Ave., New York, N. Y., plant, $1,000,000.

▲ **Tex., Port Arthur**—PLANT, etc.—Gulf Oil Corp., Port Arthur, ethylene plant, $13,500,000; warehousing and storage $200,000; water system, $45,000. CD 3/22/51.

▲ **Man., Winnipeg**—PLANT—Christie Brown & Co. Ltd., Notre Dame and Myrtle Sts., 1 story, 45,000 sq. ft., brick, steel biscuit and bread plant addn., Notre Dame St. $2,000,000.

▲ **Ont., Brockville**—FACTORY—Parke Davis & Co. Ltd., 2301 Sandwich St. E., Walkerville, factory, on 32-acre site, $5,000,000.

COMMERCIAL BUILDINGS

Mich., Detroit — TELEVISION STATION — UAW-CIO Broadcasting Corp. of Michigan, 8000 E. Jefferson Ave., television station, $800,000. Weldon & Carr, 1605 Connecticut Ave., Wash., D. C., consult. engrs.

Okla., Tulsa—TELEVISION STATION—Central Plains Enterprises, Inc., 1510 Natl. Bank of Tulsa Bldg., television station, $900,000. Jansky & Bailey, Natl. Press Bldg., Wash. D. C., consult. engr.

▲ **Okla., Oklahoma City**—TELEVISION STATION—Oklahoma State Regents for Higher Educ., Box 3241, State Capitol, television station, $1,000,000. George C. Davis, 501-514 Munsey Bldg., Wash. 4, D. C., consult. engr.

▲† **Pa., Phila.**—LABORATORY—Dpt. Navy, Phila. Naval Base, Phila., plans by Borie & Smith, 1531 Locust St., base test laboratory, Naval Shipyard, NOY 74547, Spec. 35504. $2,800,000. Harry Dechant Assoc., 123 S. Broad St., consult. engrs. CD 10/17/51, under Public Buildings.

▲ **Utah**—GAS LINE—Utah Natural Gas Co., Kearns Bldg., Salt Lake City, 56 mi. gas line between Northern Carbon Co. and Orem, $4,000,000. El Paso Natural Gas Co., Engineering Staff, Bassett Tower, Houston, Tex., engrs. CD 2/18.

▲ **Wis., Milwaukee**—STADIUM—Milwaukee County Park Comn., Court House, plans by Grassold-Johnson & Assocs., 734 N. Jefferson St., Zone 2, county stadium addn. $1,000,000. Osborn Eng. Co., 2016 Euclid Ave., Cleveland, O., consult. engr.

Ont., Toronto—TELEVISION STATION, etc.—Canadian Broadcasting Corp., 1425 Dorchester St. W., Montreal, Que., television building addn. and plant. $800,000. CD 10/27/49.

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
May 26, June 2 Massachusetts

▲ **Mass., East Boston**—HANGAR—B.A. 6/5—State, Airport Management Bd., Station 21, Gen. Boutwell Bldg., Logan International Airport, East Boston, Contr. SAMB 72 Proj. PR-2, constr. hangar, appurtenances, facilities. $2,500,000. Plans deposit $150, refundable. Samuel Glaser Assoc., 105 Newbury St., Boston, archts. CD 6/20.

BIDS ASKED—BUILDINGS

▲ **Mass., Wakefield**—SCHOOL—B.A. 6/11—Town, High School Bldg. Comn., Town Hall, high school, Main St. $2,000,000. Plans deposit $100, refundable. Adden-Parker-Clinch & Crimp, 177 State St., Boston, archts. Hubbard Lawless & Blakeley, 177 State St., Boston, mech. engrs. CD 12/16.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **H. K. Ferguson Co.**, 19 Rector St., New York, 6, N. Y. CA. $5,000,000, tube MILL, BRIDGEPORT, CONN. Bridgeport Brass Co., 32 Grand St., Bridgeport 2, Conn.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 26 Maryland June 4 New Jersey
STREETS AND ROADS
June 4 New Jersey

▲† **N. Y., Schenectady**—RUNWAY—B.A. 6/23—U. S. Eng., 80 Lafayette St., New York, Zone 13, runway exten. at Airport. $1,000,000-$3,000,000. William H. McFarland, Press Bldg., Binghamton, engr.

▲ **Md., Baltimore**—B.A. 5/27—City, Bureau Hys., 303 Municipal Bldg., Zone 2, 1,575 ft. Monroe Street Viaduct 50 ft. wide over B. & O. R.R. tracks, concrete, structural steel, concrete bents on cast in place concrete piles. $2,000,000. Plans deposit $10. Jas. H. McKay, c/o owner, hy. engr. CD-8/28.

BIDS ASKED—BUILDINGS

▲ **Md., Halethorpe**—PLANT—B.A. 5/27—Kaiser Aluminum & Chemical Co., 1924 Broadway, Oakland, Calif., aluminum extrusion plant, Total cost $9,000,000. Giffels & Vallet, 353 E. Congress St., Detroit, Mich., archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW JERSEY**—New Jersey Hy. Auth., State Hy. Dpt. Office Bldg., 1035 Parkway Ave., Trenton,
George M. Brewster Son, Inc., 275 W. Fort Lee Rd., Bogota, N. J., CA $2,093,394, grading, drainage, paving 4½ mi. Garden State Parkway, Contract 27, Section 7, from West Front St., Twp. of Middletown to Holland Rd., Twp. of Holmdel, Monmouth Co. Bids Apr. 9. CD 4/14, under LB.

▲ **PENNSYLVANIA** State Hy Dpt., 506 N. Office Bldg., Harrisburg,
Hempt Bros., Camp Hill, Pa., CA, $1,511,311, crushed aggregate base with bit. surf. 24 ft. wide, 7.43 mi.; 3 rein.-con. structures over Indian Grove Run; 5 metal plate pipe arches; bit. surf. on crushed aggregate base variable to 18 ft. wide, T.R. 126 in Union and Brush Creek Twps., from north of Pennsylvania-Maryland State Line, Fulton Co. Bids May 1. CD 5/6 under LB.

▲ **Baltimore Contractors, Inc.**, 711 S. Central Ave., Baltimore, Md., CA, $1,204,869, Contract No. 1, substructure;
De Luca Davis Constr. Co., 1968 Belair St., Baltimore, 13, Md., CA, $2,219,900, Contract 2, superstructure East Capitol Bridge over Kingman Lake and Anacostia River on E. Capitol St. Extension., WASH., D. C. D. C. Government, Director of Hy. 499 Pa. Ave. N. W., Wash., D. C. Bids Apr. 9. CD 4/13, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Gerace & Castagna, Inc.**, 155-10 Jamaica Ave., Jamaica, N. Y., LB $10,870,748, general constr.;
Jarcho Bros., Inc., 306 E. 45 St., New York 17, N. Y. LB $1,568,762, plumbing;
H. Sand & Co., Inc., 11 Park Pl., New York 7, N. Y. LB $1,453,120, heating;
L. I. Waldman & Co., 38-06 28 St., Long Island City, N. Y., LB $1,433,900, electrical work for constr. of Coney Island New General Hospital, Ocean Parkway, Avenue Z and E. 6 St., BROOKLYN, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids May 6. CD 4/30.

▲ **Abe Tartasky**, c/o Alwin Cassens, archt., 145 S. Franklin Ave., Valley Stream, N. Y. Owner Builds. $2,750,000. 125 HOUSES on 81-acre tract on Duck Pond Rd., GLEN COVE, N. Y.

▲ **Caristo Constr. Corp.**, 26 Court St., Brooklyn 2, N. Y. CA. $2,500,000. 4 story FACTORY addn., Jamaica Ave., east of 183 St., HOLLIS, N. Y. Ideal Toy Corp., 184-40 Jamaica Ave., Jamaica, N. Y. David Levy, 70 E. 45 St., New York 17, N. Y., archt.

▲ **Tishman Realty & Constr. Co., Inc.**, 445 Park Ave., New York 22, N. Y. Owner Builds. $5,000,000. 22 story OFFICE, Park Ave. and 57 St. to be called "Davies Bldg." NEW YORK, N. Y. Emery Roth & Sons, 575 Madison Ave., New York 22, N. Y., archts. Owner changed. Former contract cancelled. CD 11/3/52, under CA.

▲ **Smithtown Estates Homes**, c/o Stanley H. Klein, archt., 89-31 161 St., Jamaica, N. Y. Owner Builds. $8,000,000, 721 HOUSES, SHOPPING CENTER on 200-acre tract on north side of Jericho Turnpike adjacent to Sunken Meadow State Parkway Exten., SMITHTOWN, N. Y.

▲ **H. D. Alexander & Son**, 315 Vaughn St., Harrisburg, Pa., CA. $2,641,303, Senior HIGH SCHOOL, athletic field and greenhouse, CHAMBERSBURG, PA. Chambersburg Area Joint School Bd., Chambersburg, Pa. Bids Mar. 19. CD 4/16, under LB.

▲ **Turner Constr. Co.**, 1500 Walnut St., Phila. 2, Pa. LB $7,095,000. general contract;
Williard Sales & Service, Inc., 2901 N. Broad St., Phila. 32, Pa. LB $1,218,700. heating and ventilating contracts;
Daniel J. Keating Co., 3917-27 Baring St., Phila., 4, Pa. LB $1,195,000, plumbing contract;
Electrical Power Constr. Co., 3858 Pulaski Ave., Phila. 40, Pa. LB $989,000, electrical contract;
Otis Elevator Co., 502 North 19 St., Phila. 30, Pa. LB $315,230. elevators for HOSPITAL and DOCTORS' and NURSES' QUARTERS for Eastern Pa. Psychiatric Institute, PHILA, PA. General State Auth., 18 and Herr Sts., Harrisburg, Pa. Bids May 6. CD 3/18.

▲ **Magazine Brothers**, 1129 Vermont Ave. N. W., Wash., D. C. CA Est. $2,000,000. 229 garden type APARTMENT units New Hampshire Ave., Erie St., Adelphia Heights, East Hyattsville, HYATTSVILLE, MD. Oakton Corp., c/o contractor. Corning & Moore, 1726 M St. N. W., Wash., D. C., archts.

▲ **Cogswell Constr. Co.**, 513 Park Ave., Baltimore, Md. LB $3,495,000, est. $2,800,000. 2 and 3 story, brick, concrete, steel, block Kenwood Senior High SCHOOL, Stemmers Run Rd., Middle River, TOWSON, MD. Baltimore Co. Bd. Educ., Aigburth Rd., Towson, Md. Bids May 5. CD 4/20.

▲ **Carsondale Homes, Inc.**, Montrose Ave., Laurel, Md. Owner Builds. $1,610,000. 230 HOUSING units, Ardmore, UPPER MARLBORO, MD.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 28 Virginia June 23 Mississippi

▲† **Kentucky**—B.A. 6/16—U. S. Eng., 830 W. Broadway, Louisville, substructure 270x220x35 ft., superstructure 270x35x35 ft., brick pumping station, approx. 18,000 cu. yd. concrete for East End Flood Wall, Louisville, Jefferson Co. $2,000,000. Plans deposit $15.

BIDS ASKED—BUILDINGS

▲ **La., New Orleans**—HOUSING—B.A. 6/9—New Orleans Housing Auth., 1111 Tulane Ave., 2,632 dwelling units, Sects. 2, 3 and 4 of Desire Street Housing Project. LA 1-14. Plans deposit $100. CD 9/15/49.

▲ **Fla., Gainesville**—GENERATING UNIT—B.A. About 7/8—City, City Hall, furnish 1,500 kw. steam turbine generating unit. $2,000,000. Ebaugh & Goethe, 700 S.E. 3 St., engrs. CD 11/5.

SOON LETS CONTRACTS—BUILDINGS

▲ **Fla., Jacksonville**—HOSPITAL—Baptist Hospital Assn. of Jacksonville, 1100 San Marco Blvd., Zone 7, soon lets contract Sect. 1, 5 story, rein.-con. hospital, $1,800,000. Total est. $2,750,000. Reynolds, Smith & Hills, 227 Park St., Zone 4, engrs. and archts. CD 3/30.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **WEST VIRGINIA**—West Virginia Turnpike Comn., 1340 Wilson St., Charleston, Zone 5,
Condon, Cunningham & Peter Kiewit & Sons, 4229 Lafayette Ave., Omaha, Neb., CA, $3,499,417. Contract 21 grading, drainage 6.32 mi. West Virginia Turnpike incl. relocation of approx. 3.83 mi. U.S. Rte. 19-21 and approx. 1.75 mi. other side roads, incl. temporary relocation of sections and existing U.S. Rte. 19-21, plus constr. substructures for bridges known as Structures 10 and 12, located between point 3 mi. north of Camp Creek and about Mile 13.7 and village of Ghent Mile 20, Mercer and Raleigh Counties. Bids May 12. CD 4/20.

▲ **Anderson Bros. Corp.**, Navigation Blvd., Houston, Tex., CA. $4,500,000. 82 mi. 14 in. oil transmission line between Charlotte and Greensboro, NORTH CAROLINA. Plantation Pipe Line Co. 161 Spring St. N.W., Atlanta, Ga. CD 4/14.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **John McShain, Inc.**, 1501 N. Arlington Ridge Rd., Arlington, Va., CA. $25,000,000. APARTMENT development incl. four 9-floor bldgs., 1,679 apartment units and shopping center, Arlington Ridge Rd., Wilson

Typical Le Roi replacement-engine application—Le Roi engine on Link-Belt crane.

LE ROI
. . . the "buy-word" for dependability
in new-equipment power
—and replacement engines, too

POWER you can punish. Power you don't have to pamper. Power that pays off in dependable service — in operating economy — in quick field-maintenance. *That's Le Roi power!*

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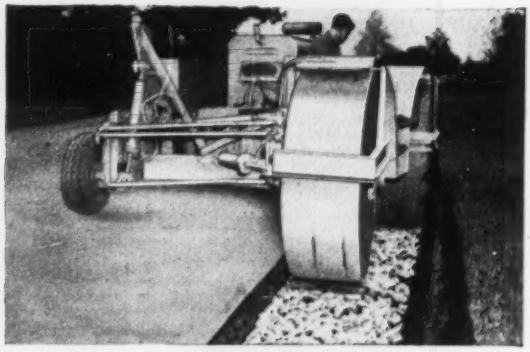

APSCO DUAL-COMPRESSION TRENCH ROLLER

In effect—it's two rollers in one!

It can be used as illustrated here—with the two compression rolls slightly overlapping—for an effective 39" rolling width. Or, it can be used with the two rolls trailing each other, giving the effect of two 20" rolls in a single pass. The ingenious design permits setting the rolls at any intermediate position, too, for a compression range of 20" to 39" in width.

Think of the economy! Think of the edge you have on competition. One operator and one machine doing the work of two!

Send for complete specifications!

ALL PURPOSE SPREADER CO. Byrna, Ohio U.S.A.

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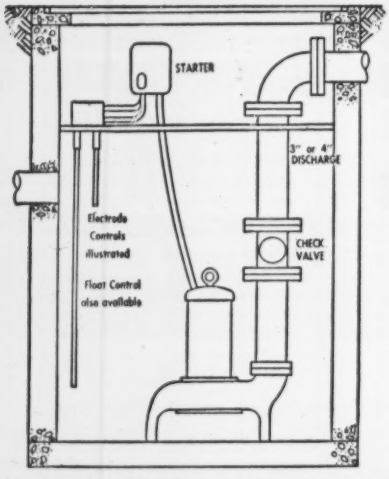
NON-CLOG SCREENLESS SEWAGE EJECTOR



Pumps ALL Sewage

From Lift Stations — From Disposals — From Laundry Trays — All Household Sewage — All Industrial Sewage — even RAGS.

The Submersible handles anything that will pass through sewage lines.

Designed

- **To operate UNDERWATER**
- **for BELOW floor level installation**
- **for installation in LIMITED SPACE**
- **for DUST-PROOF operation**

Capacities: 35 to 300 G.P.M. Heads to 45 feet

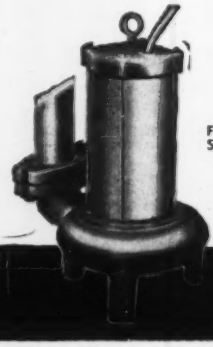


Fig. SE 860

Underground Lift Station with Submersible Pump in wet pit. Requires no pump house to mar the landscape. Duplex units furnished with alternators.

For Heavy Duty Installation—4" discharge—½ to 3 HP. See Bulletin SE 860. Max. dimensions: Dia. 23", Hgt. 28".

weil PUMP CO.

1528 NORTH FREMONT ST., CHICAGO 22

and Lee Blvd., ARLINGTON, VA. Arlington Towers Corp., 16 and North Arlington Ridge Rd., Arlington, Va. G. V. Stone, Wire Bldg., and D. H. Drayer, 6280 Ridge Dr. N. W., Wash. D. C. archts. (Correction—contractors name). CD 5/8, under CA.

▲ George W. Kane, Jefferson Bldg., Greensboro, N. C. CA. $2,500,000. University CENTER BLDG., WINSTON-SALEM, N. C. Wake Forest College, Wake Forest, N. C. CD 10/21/46.

▲ Daniel Constr. Co. of Alabama, 822 7 Ave. S., Birmingham, Ala., CA, $1,922,431 Senior High SCHOOL TUSCALOOSA, ALA. City, City Hall, Tuscaloosa, Ala. Bids May 5. CD 5/11, under LB.

▲† United Builders, Inc., Sawnee, Okla. LB $1,664,500. E.P.S., G.S.A. WAREHOUSES 1 and 2, pump house, reservoir, MAINTENANCE and PERSONNEL BLDG., GUARD HOUSE, Camp Plauche, Proj. No. 16-063, HARAHAN, LA. General Services Admin., Public Bldg. Service, 19 and F Sts. N. W., Wash. 25, D. C. Bids May 8. CD 4/24.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

May 26 Michigan

STREETS AND ROADS

May 26 Michigan June 2 Illinois

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Wood Realty Co., Carew Tower, Cincinnati, O. Owner Builds. $5,000,000. 120 one-family brick HOMES, on ½ acre sites in Lakewood Subdivision, north of Hollywood Ave., south of Oak Knoll Dr., CINCINNATI, O. Ayers & Graf, 527 Linton St., Cincinnati, O., engrs.

▲† George A. Fuller Co., 111 W. Washington St., Chicago, Ill., LB. $4,707,992, site preparation, incl. site excavation and grading, bearing, sheet piling for building and equip. foundations, concrete floor slabs, roads, yards, sidewalks, water, sewer lines, plant railroads, fence and guard rails for FACTORY housing hydraulic forging presses for the Air Force, CLEVELAND, O. Aluminum Co. of America, Alcoa Bldg., Pittsburgh, Pa. McGeorge-Hargett & Assoc., 7016 Euclid Ave., Cleveland, O., archts.-engrs. Bids May 11. CD 4/28.

▲† Federal Electric Products Co., 43-00 Crescent St., Long Island City, N. Y. CA. $1,968,600. Furnish electrical equipment for unit sub-stations for one of the process bldgs.;

I-T-E Circuit Breaker Co., 19 and Hamilton Sts., Phila., Pa., CA Est. $725,100, furnish electrical equipment for a sub-station for GASEOUS DIFFUSION PLANT (subcontractors under Peter Kiewit Sons' Co., P. O. Box 268, Portsmouth, O.) for Atomic Energy Comn., 1901 Constitution Ave. N.W., Wash. 25, D. C. PIKETON AND WAKEFIELD, O. CD 8/13/52, under CA.

▲ M. W. Kellogg Co., 225 Broadway, New York, N. Y., CA. $3,679,200, PLANT for aviation alkylation facilities (sulphuric acid alkylation unit) to mfg. components for high octane aviation gasoline, TOLEDO, O. American Mineral Spirits Co., 230 N. Michigan St., Chicago, Ill. (subsidiary of Pure Oil Co., 35 E. Wacker Dr., Chicago, Ill.). CD 1/22/52, under O., Toledo.

▲ Brehmer Electric Co., 502 E. LaSalle Ave., South Bend, Ind., CA. Approx. $3,500,000. installing electrical equip. at Clifty Creek steam-electric GENERATING PLANT on Ohio River, MADISON, IND. Indiana-Kentucky Electric Co., 30 Church St., New York 8, N. Y. CD 1/8, under CA.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

May 28, 29 Kansas May 29 Minnesota

June 2 Missouri

STREETS AND ROADS

May 28, 29 Kansas May 29 Minnesota

June 2 Missouri

BIDS ASKED—BUILDINGS

▲ Mo., St. Louis—HOSPITAL—B.A. 6/15—Cardinal Glennon Memorial Hospital for Children, c/o Archdiocese of St. Louis, Most Rev. Joseph E. Ritter, archbishop, 3910 Lindell Blvd., Zone 8, 5 story, bsmt., X-shaped hospital and chapel (main block), 3 story wings, 3 story convent, boiler house addn. to Firmin Desloge boiler house, connecting tunnel to Firmin Desloge Hospital, $5,500,000. Extended date. Maquolo & Quick, 4908 Delmar Blvd., Zone 8, engrs.-archts. Neergaard, Agnew & Craig, 41 E. 42 St., New York, N. Y., consult. engrs. CD 12/30.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

STREETS AND ROADS

June 3 California

▲ Calif., San Francisco—B.A. 6/12—Bd. Directors Golden Gate Bridge & Highway District, Toll Plaza,

(Continued on page 100)

The manufacturers of Waterplug, Thoroseal, Quickseal

Introduce 3 NEW PRODUCTS

RED STAR

THOROLOK

Intended for asbestos shingles, on roof or exterior walls of your home or other building. THOROLOK is prepared in six beautiful pastel colors. Ask for Color Card 32-C.

BLUE STAR

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Prepared especially for basement floors which need protection and corrects unsightly appearance. Furnished in six beautiful colors. Ask for Color Card 32-C.

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Clear, water-repellent material for porous brick, stone, concrete, stucco, asbestos siding and shingles, interior plaster and masonry surfaces, where texture and color are to be retained.

NEW PROTECTION

With addition of three newly-tested products to The THORO System, any type surface such as steel, wood, asbestos siding and shingles and every type masonry and stucco can be protected from excessive weathering, caused by rain and changing temperatures.

Standard Dry Wall Products
NEW EAGLE, PENNSYLVANIA

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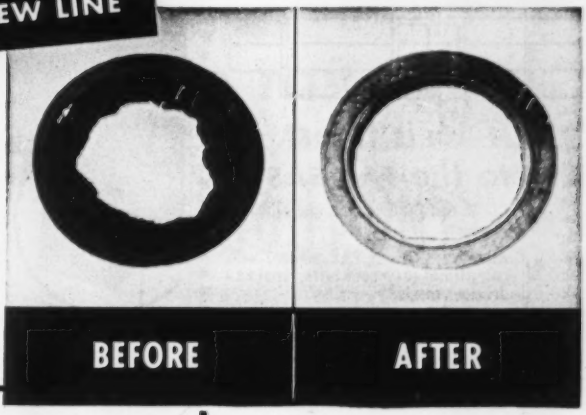
Write for our pictorially described literature

REHABILITATE YOUR OLD PIPE LINE AT MUCH LESS THAN THE COST OF A NEW LINE

Without appreciably disturbing present service . . . you can get new pipe line performance from old cast iron or steel pipe line. Line that pipe to give a new, continuous, smooth-surface. Ask PIPE LININGS, INC. to use the processes that apply cement mortar lining quickly to pipe line interiors... with only momentary interruption to install sectional by-pass lines. You can do it at much less than the cost of installing a new pipe line. Write TODAY!

Tate process used on Line 4" to 16". Centriline Process used on Line 16" to 144". Consult our hydraulic engineers . . . they are at your service.



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Protect against discoloration and contamination
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and OTHER JOBS

CROWNS—*(Any Type)*—INVERTS—UNDERCUTS

With the Jackson electric Vibratory Hand Screed (powered by a Jackson 1.25 KVA Portable Power Plant) it is possible to eliminate center construction joints and pour full widths up to 30 ft. And it is the only screed that can be rolled back (on 4 rollers) for second passes. Screed is furnished with all hardware, cable, shoes, rollers and vibratory motor attached to an 8 ft. plank. The contractor has only to provide himself with a plank of suitable length, specified crown, and then transfer the hardware to be set for any particular use. Screed has strong tendency to propel itself forward and requires only two men on any width slab. **FOR SALE or RENT at Jackson Distributors**

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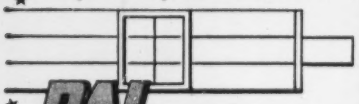

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Ideal for joint filling in flood walls, outlet works and spillways, sewage treatment plants, etc. Cork Joint Filler keeps joint filled at all times. Light color does not mar appearance of exposed concrete.

Write for details on Cork Joint Filler and the complete line of Servicised Asphalt, Cork and Rubber Composition Joint Fillers.

SERVICISED PRODUCTS CORP.
4051 W. 65TH ST. • CHICAGO 38, ILL.

(Continued from page 98)

Fort Scott, addition of bottom lateral system to Golden Gate Bridge, stiffening truss system. $3,500,000. CD 2/9.

BIDS ASKED—BUILDINGS

▲ Wash., Steilacoom—WARD—B.A. 6/23—State Dpt. P. Institutions, Olympia, women's ward at Western State Hospital, $2,300,000. Lea, Pearson & Richards, Tacoma Bldg., Tacoma, archts. CD 2/9.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Long Constr. Co.**, Billings, Mont., CA, $1,798,930 earthwork, pipe lines, structures for Area E-5 laterals East Low Canal laterals, Columbia Basin Proj., Spec. DC 3895, WASHINGTON Bureau Reclamation, Field Office Bldg. "A" 3 and A Sts. S. E. Ephrata, Wash. Bids Apr. 14. CD 4/21, under LB.

▲† **Guy F. Atkinson Co.**, Box 259, Long Beach, Calif., LB, $1,728,776, flood control and channel imprvs. of Tujunga Wash. from Lopez Dam to Arleta Ave., River Mile 6.43 to 2.93 Pacoma Wash., Channel CIVENG-04-353-53-38, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids May 8. CD 4/16.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Pacific Car & Foundry Co.**, 120 W. Hudson St., Seattle, Wash., CA, steel fabrication;
C. L. Beedle Constr. Co., Vancouver, Wash., CA, concrete construction for ingot casting and wire PLANT expansion, VANCOUVER, WASH. Aluminum Co. of America, Gulf Bldg., Pittsburgh, Pa. Est. $1,720,000. CD 12/16.

CANADA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Tallman Co. Ltd.**, 205 Stadacona St., Winnipeg, Man., CA, $1,750,000, 3,550 ft. to 7,800 ft. runway extens., taxistrip 1½ mi., PORTAGE LA PRAIRIE, MAN. Dpt. National Defence, AIR, Ottawa, Ont. CD 4/19/51.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Poole Construction Co. Ltd.**, 2402 2A St. Southeast, Calgary, Alta., CA, $2,508,000, 19 frame stucco APARTMENTS, incl. 24-suites each, CALGARY, Alta. Spruce Cliff Apartments Ltd. Calgary, Alta. Rule, Wynn & Rulle, 513 8 Ave. W., Calgary, Alta., archts. Awarded May 7.

▲ **Frid Constr. Co., Ltd.**, 128 King St. E., Hamilton, Ont., CA, $2,500,000, 3 story steel stone PHYSICAL SCIENCE BLDG. incl. 24 labs., library, lecture rooms, etc. HAMILTON, ONT. McMaster University. Dr. G. P. Gilmour, pres., Hamilton, Ont. Bids Mar. 20. CD 2/27.

▲ **Pizott Constr. Co., Ltd.**, 1250 Bay St., Toronto, Ont., CA, $30,000,000, 1 story steel brick automotive ASSEMBLY PLANT 25-acres, connecting bridge to truck assembly plant and 5½ acre exten. to parts and accessories warehouse, OSHAWA, ONT. General Motors of Canada Ltd., William St. E., Oshawa, Ont. Allward & Gouinlock, 57 Bloor St., W., Toronto, Ont., archts. Awarded May 8. CD 5/13.

▲ **Redfern Constr. Co. Ltd.**, 36 Toronto St., Toronto, Ont., CA, $2,000,000, 6 story, 108x140 ft., OFFICE, Jarvis and Charles Sts., TORONTO, ONT. Independent Order of Foresters, Temple Bldg., Toronto, Ont. Bids Apr. 23, awarded May 6. CD 4/9.

▲ **A. Janin & Co. Ltd.**, 1460 W. Sherbrooke St., Montreal, Que., CA, $2,000,000, 11 story, 74x177 ft., rein.-con., brick OFFICE, Sherbrooke St., between Fort and St. Mark St., MONTREAL, QUE. Syndicate, c/o I. S. Backler, 4838 Fulton Ave., Montreal, Que. CD 3/6, under LB.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Lytle & Green and S. Birch & Son**, Securities Bldg., Seattle 1, Wash. CA. $4,206,268. family housing, Ladd Air Force Base, ENG-95-507-53-80 and ENG-95-507-53-56, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Apr. 28. CD 5/4, under LB.

▲† **Lytle & Green Constr. Co., S. Birch & Sons and Wyatt & Kipper Engineers**, Securities Bldg., Seattle 1, Wash., CA. $2,665,518, power plant exten., Eielson Air Force Base, Inv. 53-58, ALASKA. U. S. Eng., Anchorage, Alaska. Bids May 6. CD 5/12, under LB.

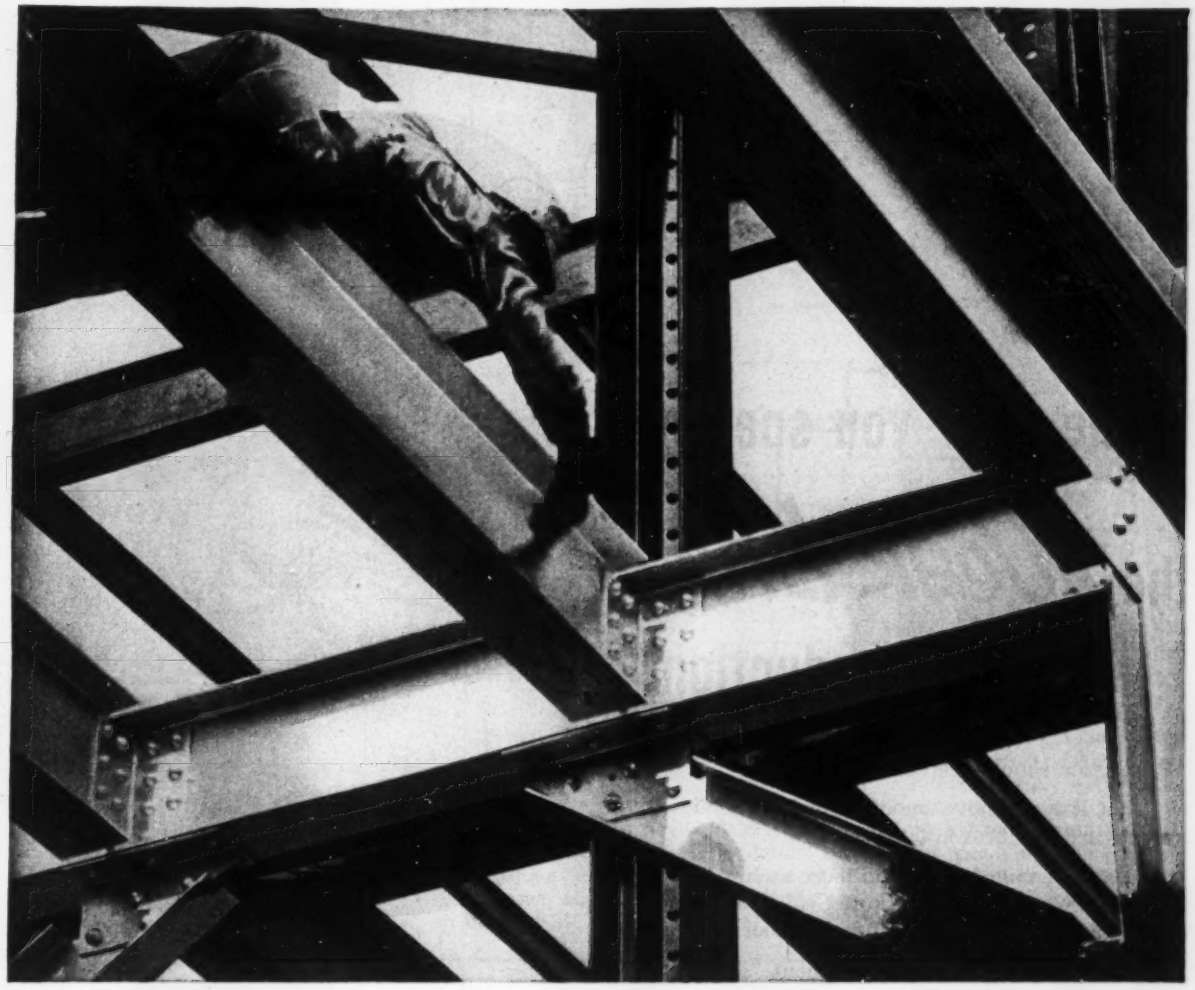
LATIN AMERICA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Morrison-Knudsen Constr. Co.**, 319 Broadway, Boise, Idaho, U.S.A. CA. $4,600,000, design and construct, port and dock facilities on Guatemala's Caribbean coast near the present port of Puerto Barrios, GUATEMALA. Govt. of Guatemala, Guatemala City, Guatemala. CD 6/20/52.

(Proposal Advertisements see pp. 107 to 109)



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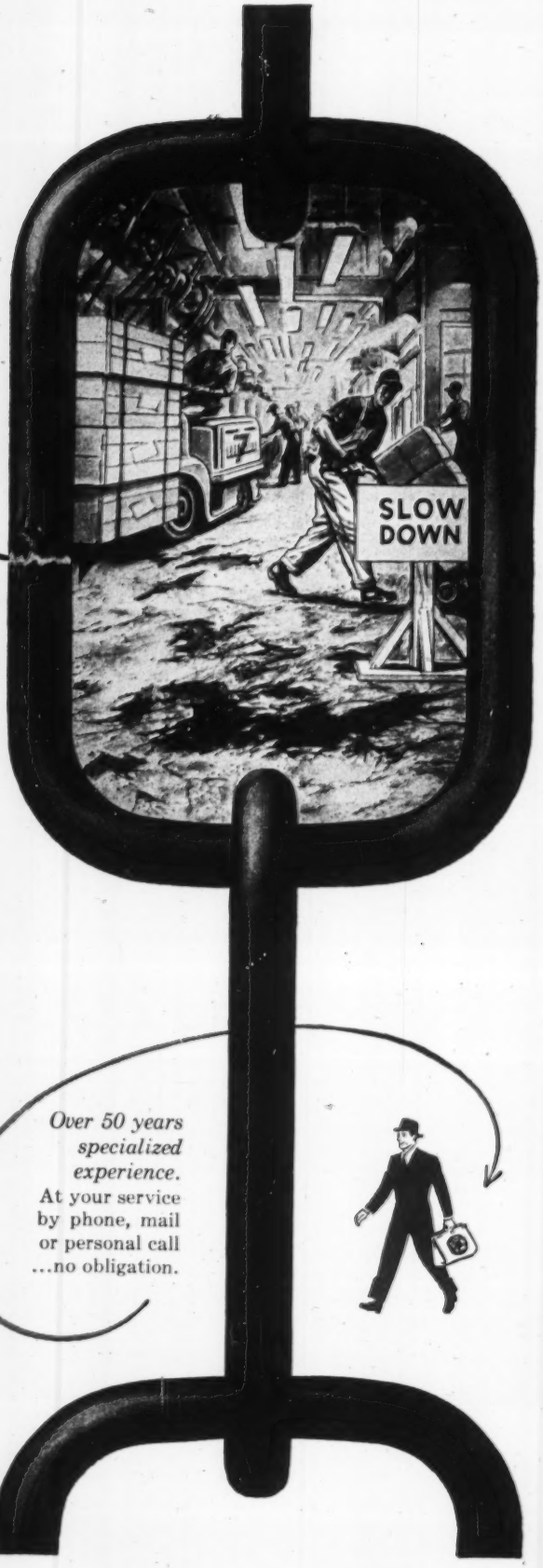
Is the floor you specify the *Weak Link* in production?



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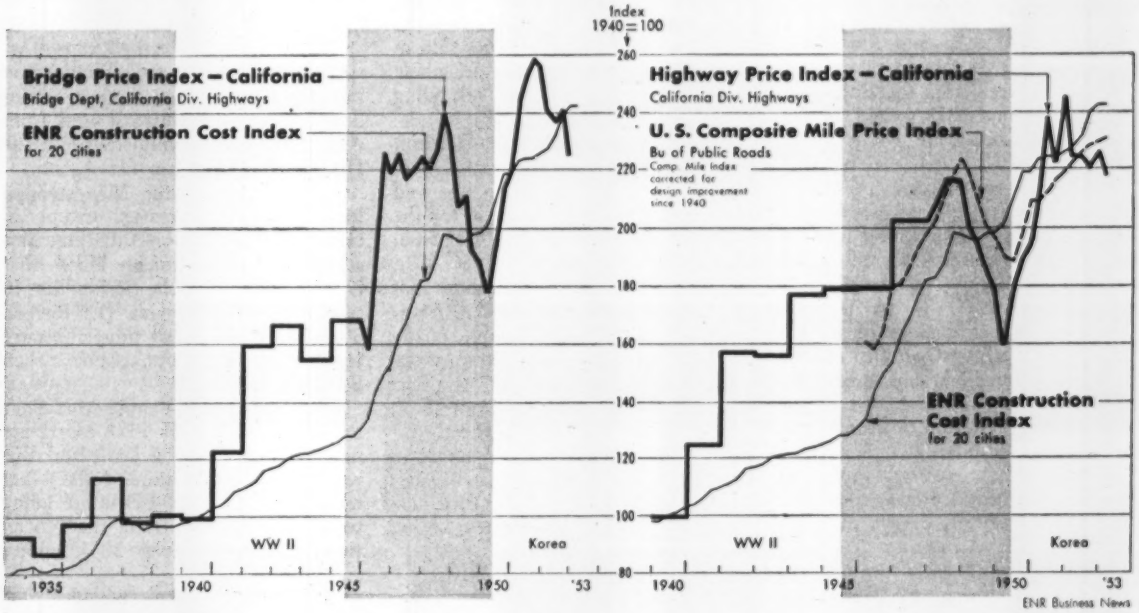
In Toronto, Ontario: THE FLINTKOTE COMPANY OF CANADA, LTD.

In London, England: Industrial Asphalts Company, Ltd.



Bids are lower on California jobs in spite of rising U.S. cost trend

Something new is happening out in California. Though the national trend of construction prices is still moving up, contractors are bidding lower on state highway and bridge jobs. The California Division of Highways says that the reasons are: more competition between contractors, improved delivery of materials, and a good supply of skilled workers.

You can see the drop in the price indexes which the California Division of Highways keeps on bids for highway and bridge construction (charts, above).

The right-hand chart shows that bid prices on highway jobs dropped 8% in the last quarter of 1952 from the high reached the last quarter of 1951.

During the first quarter of this year, the index dropped another 3.5% (ENR Apr. 23, p. 104). This is the lowest point it has reached in two years. This index has been much more volatile than the U.S. composite mile price index, put out by the federal bureau, which has during the first quarter of this year climbed slowly to a new high. It has also shown much wider swings than ENR's Construction Cost Index, which this year has been pretty stable.

The California price index on highway bridges (left-hand chart) appears for the first time in ENR. Available only to the close of 1952, it shows that winning bids on bridge jobs in the last quarter averaged 12% less than in the same 1951 period.

It's interesting to note that at the end of January there was a record number of 222 contractors qualified by the state to bid on highway work costing $1 million or more, quite a jump over the 206 in the same group last June 30. At the same time, there was a 10% drop in the number of contractors qualified to bid on jobs under $250,000.

U.S. business: the big picture

A debate that concerns construction men vitally has been going on in Washington and in New York financial circles. The subject: How tight should money get?

By postwar standards, money is now expensive. Some utility companies are paying 4% or more for construction money, compared with about 3½ %a few months back. Industrial firms have the same problems. The result is that a few companies have abandoned or postponed expansion or modernization plans. Others may follow.

The reason for the fast climb in interest rate is a huge demand for credit. Consumers now owe more installment debt than ever before. Industry still wants plenty of money to finance expansion. Local government borrowing is very high. To top it off, the Treasury has borrowed long-term money for the first time since 1945.

To keep this demand for credit from causing more inflation, the Federal Reserve Board has let the law of supply and demand take its course. In other years, it has helped commercial banks create credit by buying government securities from them.

Now some conservative economists of high reputation are warning that if FRB lets money get tighter, it may turn the boom into a recession, which would cause sharp cutbacks in residential and industrial building. They point to warning signs: (1) Farm prices have been slipping for months; (2) installment debt is getting harder to collect; (3) steel mills are now less anxious to buy steel scrap—a possible sign that steel production may turn down soon.

Washington officials, however, believe that inflation is still the main danger. Randolph Burgess, deputy secretary of the Treasury and a major architect of the tight-money policy, believes a recession is "as yet a guess, not a reality." He promises that Washington will ease credit if the need arises. Right now, he points out: (1) The latest FRB index of industrial production shows a new high; (2) unemployment is at a minimum; (3) personal income is running at a new high rate of almost $283 billion a year; (4) the cost of living is still within 1% of its high.

Taxpayers get a break on depreciation rates

Construction men—and the industries for which they build plants—got a break this week from the Bureau of Internal Revenue. BIR's rigid tax depreciation formulas are going to be eased.

Commissioner T. Coleman Andrews has ordered tax collectors to quit haggling over minor differences of opinion which develop regarding depreciation deductions that are claimed in tax returns.

This might have some effect on encouraging plant construction. And it may give contractors some tax relief by allowing them more latitude in estimating depreciation of their equipment for tax purposes.

From now on, revenue agents are supposed to accept depreciation deductions unless they are clearly in violation of standard business practices. Bulletin F, BIR's book of formulas on depreciation allowances, apparently will become merely a broad guide to what is reasonable, instead of being followed to the last comma by literal-minded tax collectors.

However, Andrews' order does not permit taxpayers to change rates of depreciation already in effect on particular equipment. It does apply to any dispute between taxpayers and BIR which had not reached the point of final decision inside the bureau.

In spelling out the new policy to field agents, Commissioner Andrews ordered them to keep these three rules in mind:

- Is the rate taken by the taxpayer fair and reasonable?
- Is the rate consistent with the taxpayer's past practices?
- Would adjustments based on standard BIR formulas amount to a large sum?

If answers to all three are "no," the agent is supposed to accept the rate used by the taxpayer in his return, even though it differs from the rigid formulas that have been established and used in recent years.

Municipal borrowing for construction sets record

Municipal bond financing for new construction in the first 20 weeks of this year, as compiled by ENR, totals over $1.7 billion, up 40% from last year, and a new record.

This includes public housing notes. Without the housing, the gain is even more impressive—over $1.5 billion, up 47% from last year. New financing for public housing totals $184 million which is an increase of 1% over last year's figure.

(These figures include notes sold in anticipation of permanent financing through bond sales, but all refunding issues are eliminated.)

According to the Daily Bond Buyer, municipal issues for all purposes, including non-construction money and refunding, totaled $1.5 billion for the first four months, up only 1% from the similar 1952 period.

The Bond Buyer's figures show that voters have been more favorable this year to new bond issues, in spite of the sharp rise in the cost of borrowed money. Bond approvals for the first four months are up 32% from 1952. The total is $308 million, mostly for new construction projects. Voters have disapproved $64 million in issues, 11% less than the total they disapproved during the corresponding period last year.

Fannie Mae will stay out of the market for now

The Federal National Mortgage Association won't buy or sell any home mortgages until the market settles down. That's the word last week from Albert M. Cole, administrator of the Housing & Home Finance Agency.

Last month, Fannie Mae stopped buying home mortgages, except in critical defense areas. And there was a House proposal—quickly killed—that it sell $1 billion of the $2.5 billion in mortgages it already has (ENR Apr. 30, p. 81). Since that time, the rates for VA and FHA mortgages have been boosted.

It's obvious that Fannie Mae can't sell 4% VA and 4¼% FHA mortgages now without taking a loss. For, this week, it was by no means certain that even 4¼% VAs and FHAs are going to sell at par. Because of the general tightness of money (page 103), bidders

Novel cost basis for water pipeline

A contract for a 5-mile, 24-in. water pipeline for Vallejo, Calif., was awarded on the basis of the cost of delivering a thousand gallons of water rather than on a lump-sum bid. Here are the details:

- Purpose—As developed by Kaiser Engineers, designers of the job, the plan provides an equitable method of comparing bids when different pipeline materials are specified. It takes into account expected life of the pipe, flow characteristics, leakage and other pertinent factors met in pumping—in this case—8 mgd. For three different pipe materials—cast-iron with cement lining, steel with coal-tar enamel lining and concrete cylinder pipe—the following factors were used:

Type of Pipe	Life in Years	Gross Carrying Capacity	Leakage per Day
Cast-iron	100	2,808 mg/year	75 gal/dia in./mile
Steel	60	2,700 mg/year	50 gal/dia in./mile
Concrete cylinder	60	2,844 mg/year	50 gal/dia in./mile

- Formula—To evaluate all the factors that go into the selection of a pipeline—first cost, life, carrying capacity, power costs, amortization of bonded indebtedness, depreciation, salvage value, pumping costs, leakage, etc.—the following formula is used:

$$\text{Cost in cents per thousand gallons} = \frac{P(R + C) + O \times 100}{Q}$$

Where P—First cost in dollars
R—Annual cost of capital, interest included
C—Annual cost of annuity for replacement depreciation
O—Annual pumping costs
Q—Quantity of water in thousands of gal/year

The formula may be simplified for each type of pipe:
C. I.: Cost of pipeline × .0000011516 + .39065 = cents/1,000 gal
Steel: Cost of pipeline × .0000016065 + .40614 = cents/1,000 gal
Con. cyl: Cost of pipeline × .0000015251 + .38556 = cents/1,000 gal

- Prices—On this job, the successful bidders—a joint venture of the Coast Pipeline Construction Co. and Wunderlich Contractors—specified concrete pipe at 0.95735¢ per 1,000 gal. Total bid was $374,919.

No bids were received on steel pipe. Two were submitted on cast-iron at rates of 1.03185¢ and 1.04731¢ per 1,000 gals.

did not appear in any hurry to pick up such loans.

So Cole is apt to move rather slowly on selling Fannie Mae's mortgages. He says that when the market does settle down, he'll sell "at a rate that can be absorbed without impairing the normal market."

Clark buys Ross Carrier

Clark Equipment Co., of Buchanan, Mich., maker of materials-handling equipment and heavy automotive transmissions, has purchased all the capital stock of Ross Carrier Co., Benton Harbor, Mich., which in turn owns Michigan Power Shovel Co.

George Spatta, Clark's president, says that the Ross earth-moving and materials-handling products will round out his company's line and will provide protection against business ups and downs.

Ross Carrier's net worth was $5.6 million, as of Jan. 31. Annual sales run about $14 million. Clark Equipment's 1952 sales were $132 million.

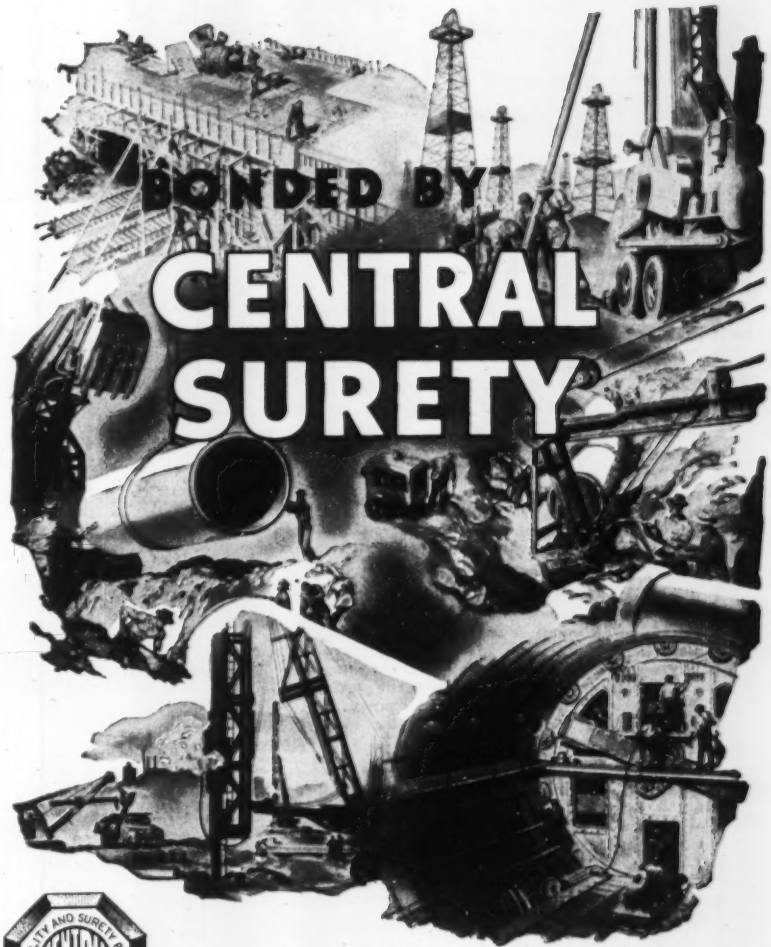
Business briefs . . .

• **Portland cement concrete pavement awards** are up 38% from 1952 in the first four months of this year, according to the Portland Cement Assn. April awards are up 77% over last year. Biggest gain (133%) in the first four months is for airport construction. Roads come next with 37%. Awards for streets, alleys are up 11%.

• **U. S. hotels** will spend at least $1 billion this year in improvements and repairs, says the American Hotel Assn. It figures that since the end of World War II, hotels have already spent $2.5 billion.

• **Certificates of necessity** for accelerated amortization totaling $118 million have been issued by the Office of Defense Mobilization in the two weeks ended May 6. The certificates covered 202 projects. This brings the total volume of certificates to slightly more than $16 billion, covering an average 61% of the $26.3-billion investment in 16,817 new or enlarged defense production facilities.

• **Atomic power** won't be competitive with coal, oil, and gas for perhaps another 10 years, according to William Lee Davidson, of the Office of Industrial Development, Atomic Power Commission. He doubts that any private group will be able to risk the money for development without some government aid.



FIDELITY AND SURETY BONDS INSURANCE

CENTRAL SURETY AND INSURANCE CORPORATION
R. E. McGINNIS, President
HOME OFFICE KANSAS CITY, MISSOURI

Diamond Core
Drilling
CORE BORINGS
for Foundations, Dams, Bridges and all Heavy Structures
GROUT HOLES
Tinney Drilling Co.
Grafton, W. Va.

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Since 1915
CONCRETE
SAND AND CEMENT
Placed by Air
38 YEARS OF EXPERIENCE PLUS—
Hundreds of nationally known clients is evidence of our engineering and construction ability to produce "Gunite" concrete construction at a lower overall cost.
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DENVER — HOUSTON — NEW ORLEANS

EVERY USER OF BOOM MACHINES...

...NEEDS A SAUERMAN Scraper!

Above, a 2½-cu. yd. Crescent scraper is used on a 1-cu. yd. boom dragline and the yardage rises to 270 cu. yd. per hour. The scraper is taking gravel from a roadside pit and delivering to a movable truck loader.

In this picture a Crescent scraper hangs from a trolley that rides on a slack cable extending from the tip of the boom to an anchorage across the river. Thus, it is able to excavate far beyond the reach of the boom and haul material onto the bank.

A Sauerman Crescent Scraper will repay its moderate initial cost many times over when added to your boom machine as auxiliary equipment. Simple to rig up, it increases the machine's capacity when used on specific job operations mentioned below.

For backfilling, grading and other jobs where material must be moved but not lifted, the conventional casting method is used. The Crescent bites into and gathers the load with the ease of a plowshare, then hauls at ground level and deposits the load automatically when the forward pull is reversed. Machine strain and power consumption required to lift and swing the load to the discharge point are eliminated.

To dig material from a river, deep pit or soft area beyond the reach of the boom, another method is used to rig the Crescent Scraper to the boom machine. For such work the Crescent is suspended by chains from a simple trolley that rides on a track cable extending from the tip of the boom out to a movable anchorage. Digging, hauling and discharge proceed as in the casting operation. Following discharge, the empty scraper is lifted and gravity-returned to the excavation point merely by tightening the track cable.

Any boom machine will handle a Crescent of larger size than its regular dragline and clamshell bucket. The Crescent is much lighter, size for size, than these buckets. Digging power and strength are derived from the Crescent's bottomless construction and flowing lines—not from weight of metal. Users of boom machines can obtain full information by writing for illustrated literature describing how other operators use Sauerman Crescent Scrapers on their machines to increase output and reduce costs.

SAUERMAN BROS., INC.

532 S. CLINTON ST., CHICAGO 7, ILL.

"Gunite" ..... the sand-cement product of the "CEMENT GUN," for Concrete and Masonry Repairs, Pre-Stressed Tanks, Steel Encasement and for lining Reservoirs, Sewers and Tunnels.

CEMENT GUN COMPANY

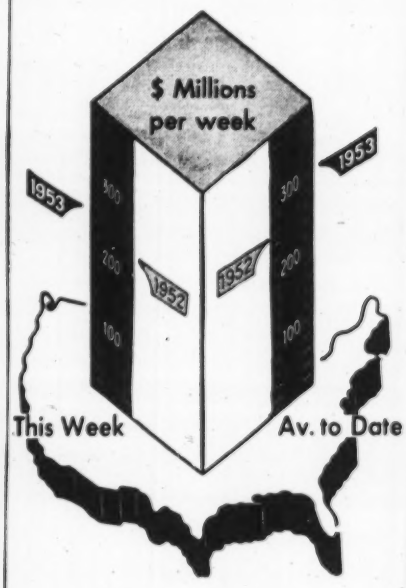
"GUNITE" CONTRACTORS

GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.

MANUFACTURERS OF THE "CEMENT GUN"

BUSINESS AND FINANCE

• New pipelines scheduled for construction this year are away ahead of 1952, according to the Petroleum Administration for Defense. It says plans are for 10,000 miles this year, compared with 6,800 actually built in 1952.



Activity This Week

As reported to ENR
(in millions of dollars)

Amount of contracts let

	This Week	Cumulative 21 wks 1953	1952	% chge
Federal	$14.2	$601.9	$814.3	−26
State and Municipal	88.3	2,005.1	1,643.5	+22
Total pub.	102.5	2,607.0	2,457.8	+6
Total priv.	155.2	3,768.3	2,876.5	+31
U. S. Total	**$257.7**	**$6,375.3**	**$5,334.3**	**+20**

Contracts by type of work

Waterworks	$2.9	$99.3	$98.6	+1
Sewerage	9.5	155.6	89.1	+75
Bridges	12.0	310.9	144.7	+115
Highways	36.9	645.8	532.8	+21
Earthwork, Waterways	2.7	137.6	235.8	−42
Buildings:				
Public, excl. hsg.	28.6	664.0	676.5	−2
Housg., pub.	0	244.4	395.9	−38
Housg., priv.	61.1	1,674.3	1,190.3	+41
Commercial	38.9	427.6	247.6	+73
Industrial	36.4	1,344.2	1,200.7	+12
Unclassified	28.7	671.6	522.9	+28
Total	**$257.7**	**$6,375.3**	**$5,334.3**	**+20**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000

ENR indexes		Base Year = 100 1913	1926	1949
Constr. cost	May	589.21	283.23	123.52
	Apr.	589.71	283.47	123.62
Bldg. cost	May	426.47	230.54	121.27
	Apr.	426.63	230.62	153
Volume	Apr.	529	215	153

OFFICIAL PROPOSALS

Bids: June 16, 1953

Miscellaneous

SEALED PROPOSALS will be received by the President of the Levy Court of New Castle County, Room 134-A, Public Building, Wilmington, Delaware, until 11:00 A.M. Daylight Saving Time, on June 16, 1953 and at that time publicly opened for contracts involving the following approximate quantities:

CONTRACT SD-47
ROSEVILLE PARK

Lump Sum Clearing & Grubbing
9,000 C.Y. Excavation
100 C.Y. Borrow Pit Stripping
6,000 C.Y. Selected Borrow
1,620 Tons Hot-Mix Asphaltic Conc.
3,000 Gal. R. C. 1 Tack Coat
0.5 C.Y. Cement Concrete Masonry
35 L.F. 12" R. C. Pipe
364 L.F. 15" R. C. Pipe
90 L.F. 18" R. C. Pipe
50 L.F. 24" R. C. Pipe
20 S.F. 4" Sidewalk
20 S.F. Replace Flagstone Walk
35 L.F. Resetting Brick Curb
1 Ea. Type "B" Catch Basin
3 Ea. Type "C" Catch Basin
1,640 Lbs. Castings
3,700 S.Y. Top Soil
0.80 Ac. Seeding
2,100 S.Y. Sodding
80 L.F. Perforated Corrugated Metal Pipe 6" Underdrain

CONTRACT-SD-51
WOODCREST
Surry Ave.

1,075 C.Y. Excavation
1,150 Tons Selected Borrow
840 Tons Waterbound Macadam
325 Tons Hot-Mix Asphaltic Conc.
560 Gal. R. C. 1 Asphlat
30 L.F. 4" V. C. Pipe
175 S.Y. Cement Concrete Gutters (6")
2,075 L.F. Integral Curb & Gutter
30 S.F. Cement Concrete Sidewalk (4")
1,800 S.Y. Topsoil
0.35 A. Seeding

Attention is called to the Special Provisions in the proposal, specifications and contract agreement.

Performance of contract shall commence within ten (10) days after execution of the contract and be completed as specified.

Monthly payments will be made for ninety (90) per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the County Engineer.

Each proposal must be accompanied by a surety bond, certified check, or money to the amount of at least ten (10) per centum of the total amount of the proposal.

The envelope containing the proposal must be marked "Suburban Development Contract No. —."

The Contract will be awarded or rejected within twenty (20) days from the date of opening proposals.

The right is reserved to reject any or all bids.

Complete sets of plans and specifications may be obtained from the County Engineers Office, upon receipt of two dollars ($2.00) for each contract, which amount will not be refunded.

Make checks payable to the Levy Court of New Castle County.

LEVY COURT OF NEW CASTLE COUNTY
BY: JOHN TAYLOR
COUNTY ENGINEER

Bids: May 26, 1953

Contracts SD-39, 46, 49, 50

SEALED PROPOSALS will be received by the President of the Levy Court of New Castle County, Room 134-A, Public Building, Wilmington, Delaware, until 11:00 A.M. Daylight Saving Time, on May 26, 1953 and at that time publicly opened for contracts involving the following approximate quantities:

CONTRACT SD-39
DUROSS HEIGHTS

Lump Sum Clearing & Grubbing
10,000 C.Y. Excavation
400 C.Y. Borrow Pit Stripping
9,000 C.Y. Selected Borrow
2,400 Tons Hot-Mix Asphaltic Concrete
4,600 Gal. R. C. 1 Tack Coat

OFFICIAL PROPOSALS

9.0 C.Y. Cement Conrete Pavement
25.0 C.Y. Cement Concrete Masonry
475 Lbs. Reinforcing Steel
350 L.F. 15" R. C. Pipe
54 L.F. 24" R. C. Pipe
54 L.F. 30" R. C. Pipe
57 L.F. 36" R. C. Pipe
63 L.F. A.C.C.M. Pipe Arch 16 Gauge (22" x 12")
60 L.F. A.C.C. Pipe Arch 16 Gauge (25" x 16")
110 L.F. A.C.C.M. Pipe Arch 14 Gauge (29" x 18")
100 L.F. 4" Vit. Clay Pipe
310 S.Y. Cement Concrete Gutter 6"
1 Each Catch Basin, Type PW
3 Each Catch Basin, Type B
1 Each Catch Basin, Type Special
1 Each Special Junction Box
1,640 Lbs. Castings
0.7 Acres Seeding & Mulching
950 S.Y. Sodding
120 L.F. 6" Perforated Corrugated Metal Pipe Underdrain

CONTRACT SD-46
McDANIEL HEIGHTS
Nichols Avenue

830 C.Y. Excavation
840 T. Selected Borrow
600 T. Waterbound Base Course
250 T. Hot Mix Asphaltic Concrete
400 Gal. Tack Coat (R.C. 1)
1 C.Y. Cement Concrete Masonry
38 S.Y. Cement Concrete Gutter
1560 L.F. Integral Concrete Curb & Gutter
700 S.Y. Topsoil
0.15 A.C. Seeding
1 Each Adjust Manholes
1 Each Adjust Catch Basin
50 L.F. Delaying 12" R.C. Pipe
35 L.F. 4" V.C. Pipe
16 L.F. 6' V.C. Pipe
26 S.F. 4' Concrete Sidewalk

McDANIEL CREST
CONTRACT SD-49
Orchard Drive

2050 C.Y. Excavation
1850 T. Selected Borrow
1400 T. Waterbound Macadam Base
520 T. Hot-Mix Asphaltic Concrete
900 Ga. R. C. 1. Tack Coat
30 L.F. 4" V. C. Pipe
150 S.Y. Cement Concrete Gutters
3480 L.F. Integral Curb & Gutters
1950 S.Y. Topsoil
0.4 A.C. Seeding
3 ea. Adjust Manholes

CONTRACT SD-50
WOODCREST
Rochelle Avenue

420 C.Y. Excavation
480 T. Selected Borrow
345 T. Water Bound Macadam Base
135 T. Hot-Mix Asphaltic Conc.
4 C.Y. Cement Concrete Pavement
960 L.F. Integral Curb & Gutter
250 L.F. Cement Concrete Sidewalk
670 S.Y. Topsoil
0.14 A. Seeding
1 ea. Adjust Stone Monuments
2 ea. Adjust Manholes
232 gal. R.C.I. Tack Coat

Attention is called to the Special Provisions in the proposal, specifications and contract agreement.

Performance of contract shall commence within ten (10) days after execution of the contract and be completed as specified.

Monthly payments will be made for ninety (90) per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the County Engineer.

Each proposal must be accompanied by a surety bond, certified check, or money to the amount of at least ten (10) per centum of the total amount of the proposal.

The envelope containing the proposal must be marked "Suburban Development Contract No. —."

The Contract will be awarded or rejected within twenty (20) days from the date of opening proposals.

The right is reserved to reject any or all bids.

Complete sets of plans and specifications may be obtained from the County Engineer's Office, upon receipt of two dollars ($2.00) for each contract, which amount will not be refunded.

Make checks payable to the Levy Court of New Castle County.

LEVY COURT OF NEW CASTLE COUNTY
BY: JOHN TAYLOR
COUNTY ENGINEER

OFFICIAL PROPOSALS

Bids: June 15, 1953

Constr. of Water Treatment Plant Outfall Sewer

Sealed proposals for the construction of Water Treatment Plant Outfall Sewer will be received by the Village Board, Village of Perry, New York, at the Village Hall until 8:00 o'clock P.M., E.D.T. on the fifteenth day of June, 1953.

Information for bidders can be obtained at the office of the Village Clerk at Perry, New York, or the office of William S. Lozier Company, Engineers, 10 Gibbs Street, Rochester, New York. Copies of plans may be obtained upon the payment of five dollars ($5.00) for each set, which will not be refunded.

The work consists of the construction of: SECTION B—Approximately 3,000 feet of 12" and 85 feet of 8" Outfall sewer and appurtenances.

W. GORDON McGUIRE
Village Clerk

Tenders are being invited by the New Zealand Government for the supply of one Vertical Left Hand Single Cut Log Bandmill. Tenders close with the Stores Officer, New Zealand Forest Service, P.O. Box 1028, Wellington, New Zealand, on June 23, 1953. Quotation forms, specifications and drawings may be obtained on application to the New Zealand Government Trade Commissioner, 1346 Connecticut Avenue, N. W., Washington 6, D. C.

Bids: June 15, 1953

Water Treatment Plant

Sealed proposals for the construction of Water Treatment Plant will be received by the Village Board, Village of Perry, New York, at the Village Hall until 8:00 o'clock P.M., E.D.T., on the 15th day of June, 1953.

Information for bidders can be obtained at the office of the Village Clerk at Perry, New York, or the office of William S. Lozier Company, Engineers, 10 Gibbs Street, Rochester 4, New York. Copies of plans may be obtained upon the payment of ten dollars ($10.00) for each set, which will not be refunded.

The work consists of the construction of a 1.5 M.G.D. rapid sand filter plant with pre-treatment unit and low lift pump station.

W. GORDON McGUIRE,
VILLAGE CLERK

Bids: June 2, 1953

NOTICE TO BIDDERS
Contract M-15
Contract M-18
Contract M-20
Contract M-15 & 18
Contract M-15 & 20
Contract M-18 & 20
Contract M-15, 18 & 20

Sealed proposals will be received by the Ohio Turnpike Commission for the sale to the Ohio Turnpike Commission of fabricated structural steel and other appurtenant steel items in accordance with each of the contracts enumerated above.

The performance required under Contract M-15 consists of the sale, including delivery, of fabricated structural steel and other appurtenant steel items for fifteen twin and eleven single bridge structures of from one to six spans each, in Design Section D-15 of Ohio Turnpike Project No. 1 in Ottawa and Wood Counties, Ohio. Handrails, steel piles, scupper castings and gratings and anchor bolt assemblies are not included in the items to be furnished.

Approximate quantities of the items in Contract M-15 are as follows:

Fabricated Structural Steel	6,959,000 lbs.
Structural Expansion and/or Contraction Joints	291,300 lbs.

The performance required under Contract M-18 consists of the sale, including delivery, of fabricated structural steel and other appurtenant steel items for five twin and twelve single bridge structures of from three to five spans each, in Design Section D-18 of Ohio Turnpike Project No. 1 in Lucas and Fulton Counties, Ohio. Handrails, steel piles, scupper castings and gratings and anchor bolt assemblies are not included in the items to be furnished.

Approximate quantities of the items in Contract M-18 are as follows:

Fabricated Structural Steel	2,823,300 lbs.
Structural Expansion and/or Contraction Joints	135,200 lbs.

(Continued on the following page)

OFFICIAL PROPOSALS

The performance required under Contract M-20 consists of the sale, including delivery, of fabricated structural steel and other appurtenant steel items for three twin and twelve single bridge structures of from three to five spans each, in Design Section D-20 of Ohio Turnpike Project No. 1 in Fulton and Williams Counties, Ohio. Handrails, steel piles, scupper castings and gratings and anchor bolt assemblies are not included in items to be furnished.

Approximate quantities of the items in Contract M-20 are as follows:

Fabricated Structural Steel	4,547,000 lbs.
Structural Expansion and/or Contraction Joints	257,500 lbs.

Contracts M-15 & 18, M-15 & 20, M-18 & 20 and M-15, 18 & 20 are combination contracts. The performance required under each such combination contract is the sale of the fabricated structural steel and other appurtenant steel items, including delivery, above set forth for the above-mentioned individual contracts containing the same numerals as a part of their captions. The steel and incidental performance required under Contract M-15 & 18 is thus the same as that required under Contract M-15 and Contract M-18, taken together. The performance required under the other combination contracts corresponds in like manner to that required under the individual contracts to which their captions are similarly related.

Copies of the Plans for said Contracts, and of the General Specifications for Ohio Turnpike Project No. 1, a part of which constitute Specifications applicable to these Contracts, are immediately available for public inspection or purchase at the office of the Chief Engineer, Ohio Turnpike Commission, 139 East Gay Street, Columbus 15, Ohio. These documents may be purchased from said chief engineer for the following sums, per set, which sums are non-returnable:

General Specifications for Ohio Turnpike Project No. 1	$ 5.00
Plans, per set, per individual contract	$15.00

Forms or copies of all remaining Contract Documents, including Proposals for each of the Contracts set forth above; the Affidavit which must accompany any such Proposal; this Notice to Bidders; the Special Provisions; which specify, among other things, which of the aforesaid General Specifications apply to these Contracts; the Contract to be entered into with the (or each) successful Bidder; and the Contract Bond to be furnished with such Contract will be furnished upon request and without charge to any interested person at the aforesaid chief engineer's office on and after May 14, 1953.

All Proposals must be on the form prescribed by the Commission and must comply with the terms and conditions set forth in the Contract Documents.

Each Proposal must be accompanied by a certified check, or checks, on a solvent bank, or banks, payable to the order of the Ohio Turnpike Commission, in an amount not less than 5 percent of the amount bid, and, in the case of a multiple bid, of the highest total which can be obtained by adding the contract prices of any group of contracts which could be awarded to the Bidder on the basis thereof. The Commission may at any time cash any such check. Each such check, or the proceeds thereof, will be held by the Commission as a guaranty that, if any Proposal guaranteed thereby is accepted, a Contract will be entered into and the performance of the Proposal secured. Each such check, or the proceeds thereof, will be returned or forfeited as provided in paragraphs G-3.03 and G-3.06 of the aforesaid General Specifications; provided that if there be a forfeiture, it shall be of an amount equal to 5% of the total amount bid in the Proposal with respect to which the forfeiture occurs, and any excess thereover will be returned to the Bidder.

All bids must be received at or before 10:00 A.M., Eastern Standard Time, June 2, 1953, in the offices of the Ohio Turnpike Commission, 139 East Gay Street, Columbus 15, Ohio. At 10:00 A.M., Eastern Standard Time, June 2, 1953, at said offices at 139 East Gay Street, the bid box will be opened and all proposals will be publicly opened and read.

The award of any of the above-enumerated Contracts, if any award be made, will be to the Bidder or Bidders whose Proposal or combination of Proposals is lowest and best for supplying the steel to be purchased, taken as a whole, and complies with all the prescribed requirements. The Commission reserves the right to reject any or all Proposals and to waive technicalities.

OHIO TURNPIKE COMMISSION
DATED May 13, 1953

OFFICIAL PROPOSALS

Bids: May 28, 1953

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Public Buildings Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 28th day of May, 1953, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 6				
		J. H. THOMAS, District Engineer, 30 West Main Street, Hornell, N. Y.				
Tioga	R.C. 53-48	Smithboro-Nichols-Wappaseening, S.H. 1615 Tioga-Nichols Br.No.1 (Susquehanna River)	0.13	Bridge Deck: Repair and Painting	$8,000 Plans $10	140,000
		DISTRICT No. 8				
		J. S. BIXBY, District Engineer, Pleasant Valley Rd., Poughkeepsie, N. Y.				
Columbia & Dutchess	T.S.P. 53-1P	Taconic State Pkwy. Sect. 7, Pt. 3; Sect. 8; Sect. 9A, Pts. 1 & 2; and Sect. 9B, Pt. 1	3.64 (Acc.) 12.29 (Pky.)	8" Cem. Conc. Pavt. 2 @ 24' Var. Wide=13.69 Mi. Asp. Conc. Ty. 1A, Opt.= 1.34 Mi. Bit. Mac. Gr. Gravel D.S.T.=0.90 Mi.	$230,000 Plans $100	4,205,000
Columbia	FARC 53-45	Bell Pond-Claverack, S.H. 1919 Project F-587(5)	3.80	Asp. Conc. Ty. 1-A, Opt.	$11,000 Plans $10	204,000
		DISTRICT No. 9				
		F. W. DONOVAN, District Engineer, 71 Frederick Street, Binghamton, N. Y.				
Chenango	FARC 53-44	Smyrna-Sherburne Pt. 2, S.H. 9097 Project S-838(2)	0.81	Asp. Conc. Ty. 1A, Opt.= 0.79 Mi. Misc. Work=0.02 Mi. Br. Plate Girder 212.3' Br. Conc. Closed Box 40' Br. Conc. Closed Box 40'	$23,000 Plans $10	421,000
Schoharie	FARC 53-41	Cobleskill-Sharon Springs Pt. 2, S.H. 1467 Project S-417(1)	5.21	Asp. Conc. Ty. 1A, Opt.	$9,500 Plans $10	176,000
Delaware	FARC 53-42	Hancock-Long Eddy, S.H. 8464 Project F-502(14)	5.45	Bit. Macadam Ty. 1	$10,000 Plans $10	172,000
		DISTRICT No. 10				
		M. E. GOUL, District Engineer, Montauk Highway, Babylon, L. I., New York				
Bronx	FAMDE 53-4	Major Deegan Expressway Cont. No. 4 Project U-UG-1082(15)	1.31	Cem. Conc. Pavt. (Viaduct) =0.45 Mi. Sheet Asphalt Pavt.=0.62 Mi. Grading, Drainage, Misc. Work=0.24 Mi. RR Sep. Comp. Viaduct 2368.4' Pedest. Overpass Built-up Sect. 179.5'	$252,000 Plans $50	4,580,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specifications, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

Bids: June 2, 1953

West Virginia Turnpike Commission

Sealed proposals will be received by the West Virginia Turnpike Commission for:

CONTRACT 26, 26A, 26B

The work to be done under Contract 26 consists in performing the required grading and drainage for approximately nine and seven-tenths (9.7) miles of the West Virginia Turnpike including the relocation of 1.2 miles of West Virginia Secondary Route 15, Fayette County, 0.5 miles of West Virginia Secondary Route 83, Kanawha County, together with the construction of substructures for four bridges, five reinforced Box Culverts and one I-Beam Timber Deck Bridge. This work is located between the town of Mahan, Fayette County, Mile 57.9 and the town of Standard, Mile 67.6 Kanawha County, West Virginia and is in connection with the construction of the West Virginia Turnpike in the State of West Virginia.

Contract 26 consists of the combined quantities of Contract 26A and Contract 26B.

The principle items of work include:

	Approximate Quantity 26A	26B	
Clearing and Grubbing	125	100	Acres
Excavation (All Types)	1,229,000	1,459,000	Cu. Yds.
Concrete	1,665	2,845	Cu. Yds.
Reinforcing Steel	135,500	207,400	Pounds
Steel Piles (Furnish)	56,760	46,430	Pounds
Steel Piles (Drive)	1,070	875	Lin. Feet
Culvert Pipe and Underdrain	5,900	6,750	Lin. Feet

Proposals will be received at the office of the West Virginia Turnpike Commission, 1340 Wilson Street, Charleston 5, West Virginia until 9:00 A.M. Eastern Standard Time, and thereafter at the House of Delegates Chamber, State Capitol, Charleston, West Virginia until 10:00 A.M. Eastern Standard time, on June 2, 1953, at which time and place said proposals will be publicly opened and read.

WEST VIRGINIA TURNPIKE COMMISSION
D. H. Morton
Chairman

May 5, 1953

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3953) will be received at Loveland, Colorado, until 10 a.m., MST, June 10, 1953, for furnishing labor and materials for earthwork and structures, Boulder Creek Supply Canal, Station SV 518/12.47 to Station 664/38.5. Location south of Lyons, Boulder County, Colorado. Principal items are: 466,000 cu. yds. excavation; compacting embankment, earth lining, and backfill, 238,000 cu. yds.; furnishing and laying 7600 lin. ft. of precast concrete and corrugated metal pipe; and other work. Completion time 400 days. For particulars, address Bureau of Reclamation, Loveland, Colorado; or Building 53, Denver Federal Center, Denver, Colorado.

FRED G. AANDAHL, Assistant Secretary for Water and Power Development
Department of the Interior

OFFICIAL PROPOSALS

Bids: June 6, 1953

NOTICE TO BIDDERS
Contract M-19

Sealed proposals will be received by the Ohio Turnpike Commission for the sale to the Ohio Turnpike Commission of fabricated structural steel and other appurtenant steel items in accordance with Contract M-19.

The performance required under Contract M-19 consists of the sale, including delivery, of fabricated structural steel and other appurtenant steel items for two twin and ten single-bridge structures of from three to four spans each, in Design Section D-19 of Ohio Turnpike Project No. 1 in Fulton County. Handrails, steel piles, scupper castings, and gratings and anchor bolt assemblies are not included in the items to be furnished.

Approximate quantities of the items in Contract M-19 are as follows:

Fabricated Structural Steel	1,861,000 lbs.
Structural Expansion and/or Contraction Joints	50,800 lbs.

Copies of the Plans for said Contract, and of the General Specifications for Ohio Turnpike Project No. 1, a part of which constitute Specifications applicable to this Contract, are immediately available for public inspection or purchase at the office of the Chief Engineer, Ohio Turnpike Commission, 139 East Gay Street, Columbus 15, Ohio. These documents may be purchased from said chief engineer for the following sums, which sums are non-returnable:

General Specifications for Ohio Turnpike Project No. 1	$ 5.00
Plans	15.00

Forms or copies of all remaining Contract Documents, including the Proposal; the Affidavit which must accompany the Proposal; this Notice to Bidders; and Special Provisions, which specify, among other things, which of the aforesaid General Specifications apply to Contract M-19; the Contract to be entered into with the successful Bidder; and the Contract Bond to be furnished with such Contract will be furnished upon request and without charge to any interested person at the aforesaid Chief Engineer's office on and after May 14, 1953.

All Proposals must be on the form prescribed by the Commisison and must comply with the terms and conditions set forth in the Contract Documents.

Each Proposal must be accompanied by a certified check on a solvent bank, payable to the order of the Ohio Turnpike Commission, in an amount not less than 5 percent of the total amount bid in such Proposal. Said certified check will be held by the Commission as a guarantee that, if the Proposal is accepted, a contract will be entered into and the performance of the Proposal will be secured. Each such check, or the proceeds thereof, will be returned or forfeited as provided in paragraphs G-3.03 and G-3.06 of the aforesaid General Specifications.

All bids must be received at or before 10:00 A.M., Eastern Standard Time, July 2, 1953, in the offices of the Ohio Turnpike Commission, 139 East Gay Street, Columbus 15, Ohio. At 10:00 A.M., Eastern Standard Time, June 2, 1953, at said offices at 139 East Gay Street, the bid box will be opened and all proposals will be publicly opened and read.

The award of the Contract, if any award be made, will be to the bidder whose proposal is lowest and best and complies with all the prescribed requirements. The Commission reserves the right to reject any or all proposals and to waive technicalities.

OHIO TURNPIKE COMMISSION
DATED May 13, 1953

Bids: June 9, 1953

Construction Work

Sealed proposals will be received at the office of the Sanitation District No. 1 of Campbell and Kenton Counties, Kentucky, 37 East Fourth Street, Newport, Kentucky, until 2:00 P.M., June 9, 1953, Eastern Standard Time, and opened immediately thereafter, for furnishing the material and performing the labor for the execution and construction of the following work:

Eighth Street Pump Station, appurtenances, and the sewers in conjunction therewith

Patton Street Pump Station, appurtenances, and the sewers in conjunction therewith

In accordance with the plans and specifications prepared by Vogt, Ivers, Seaman and Associates for the Commissioners of the Sanitation District No. 1 of Campbell and Kenton Counties, Kentucky, and on file in the office of the Sanitation District No. 1. Copies of plans for the complete project together with specifications and proposal forms and any further information desired, may be secured from the office of Vogt, Ivers, Seaman and Associates, Engineers-Architects, 34 West Sixth Street, Cincinnati, Ohio.

Drawings and specifications will be forwarded, shipping charges COLLECT, upon receipt of written requests. A deposit in the amount indicated will be required for the drawings and specifications:

Complete set $20.00

Refunds for the plans and specifications will be made if returned prepaid, in good usable condition, within 10 days after bids have been opened.

Bids are to be sealed and addressed to:

Sanitation District No. 1 of Campbell & Kenton Counties, Kentucky
37 East Fourth Street
Newport, Kentucky

The Commissioners of Sanitation District No. 1 reserve the right to accept or reject any or all proposals, or the proposal for any one or more of the units or sections of the work under consideration.

WILLIAM D. ANDERSON—Secretary
Sanitation District No. 1 of
Campbell and Kenton Counties, Ky.

Bids: June 1, 1953

Sewage Disposal Project

CITY OF KNOXVILLE, TENNESSEE

Sealed proposal will be received by the Purchasing agent of the City of Knoxville at his office in the City Hall, Knoxville, Tennessee until 10:00 A. M. July 1, 1953, at which time they will be publicly opened and read aloud and contracts awarded as soon thereafter as practicable for the construction of a Sewage Disposal Project.

The work will be performed under the following divisions and each bidder may submit a proposal for any Division, for all Divisions or for any combination of Divisions.

Intercepting Sewers and Force Main
- Division A—Second Creek to Williams Creek
- Division B—Plant Site to Second Creek
- Division C—Plant Site to Sequoyah Hills
- Division D—South Side and Tennessee River Crossings

Loves Creek Treatment Plant
- Division E1—Structures and Equipment
- Division E2—Pumping Equipment

Cheowa Circle and Jones Street Pumping Stations
- Division E3—Pumping Stations
- Division E4—Pumping Equipment

Third Creek Treatment Plant
- Division F—Structures and Equipment
- Division G—Electrical Work
- Division H—Pumping Equipment

The Instructions to Bidders, Proposal, Agreement, Specifications, Plans, and Form of Performance Bond may be examined at the office of the City Engineer, City Hall, Knoxville, Tennessee, and at the office of Greeley and Hansen, Engineers, 220 South State Street, Chicago 4, Illinois. Copies of these Contract Documents may be obtained from either place upon the deposit of Twenty-five Dollars for each set. Any bidder, upon returning such set promptly and in good condition, will be refunded his deposit, and any non-bidder, upon so returning such set, will be refunded one-half of his deposit.

Each proposal must be accompanied by money or a certified check on a solvent bank or trust company, made payable to the City of Knoxville, in the amount of five per cent (5%) of the total bid, as assurance that the bid is made in good faith.

All bidders must be licensed contractors, as required by Chapter 135 of the Public Acts of 1945, as subsequently amended by the General Assembly of the State of Tennessee.

Attention is called to Section 9 of the Rules and By-laws adopted April 27, 1945 by the State Board of Licensing General Contractors, Nashville, Tennessee, which reads in part as follows:

"The architect or engineer shall direct that the number and date of license appear on the envelope containing the bid; otherwise the bid will not be opened."

The City of Knoxville reserves the right to waive any informalities in or to reject any or all bids and to accept the bid which it deems most favorable to the interest of the City, after all bids have been examined and canvassed.

City of Knoxville
(Signed) Charles O. Currier
City Purchasing Agent

Dated: May 15, 1953
Knoxville, Tennessee

June 2, 1953 Postponement of Bid Date

Bronze Venturi Meters
Contract 422

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 10:00 A.M., Eastern Standard Time, on Tuesday, May 19, 1953, for Contract 422, for furnishing, testing and delivering two 60-inch by 42-inch, one 20-inch by 12-inch and one 16-inch by 12-inch bronze nozzle type Venturi meters, instrument assemblies, bronze castings, electric cables and appurtenances for the Downsville release water chamber and the Neversink intake chamber of the Delaware system, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of ten thousand dollars ($10,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in Room 1316, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS E. McGAHEN, EDWARD C. MAGUIRE, Commissioners, Board of Water Supply; BETTY COHEN, Acting Secretary.

NOTICE IS HEREBY GIVEN that the receipt and opening of bids on the above Contract 422 have been postponed until 10:00 A.M., Eastern Standard Time, on Tuesday, June 2, 1953.

IRVING V. A. HUIE, President, RUFUS E. McGAHEN, EDWARD C. MAGUIRE, Commissioners, Board of Water Supply, City of N. Y.; BETTY COHEN, Acting Secretary.

The Commonwealth of Pennsylvania will receive sealed proposals through the Water and Power Resources Board, Department of Forests and Waters, Room 405 Education Building, Harrisburg, Pennsylvania, until 1:00 o'clock E.S.T. (2 o'clock D.S.T.), Monday June 8, 1953, for sale of the following: The electrically driven 15 inch portable hydraulic cutter head dredge "Chester". Overall length 77 feet, width 30 feet, maximum draft 4 feet, above water level clearance 13 feet. Dredge is mounted with 15" Morris centrifugal type dredge pump of 9,000 G.P.M. capacity. Hull is composed of 9 demountable steel pontoons and can be assembled on water, with motors and appurtenant equipment. Portable Electrical substation and three rubber tire trailers comprising a bank of three 500 K.V.A. single phase transformers and 2400 volt secondaries and appurtenances, fifteen 1000 ft. lengths of armored shore cable, type SH-D on reels with connection boxes and mounting accessories. One 1000 ft. length of rubber jacketed dredge submarine cable type SH-D on reel. The dredge, electrical substations and equipment are in good operating condition. Detail specifications of the equipment and proposal forms are available and inspection may be arranged at the Schuylkill River Project Office, 1973 West Main Street, Norristown, Pennsylvania. Bid shall be a lump sum amount for entire equipment listed and shall be accompanied by a certified check, drawn to the order of the Commonwealth of Pennsylvania in the amount of $10,000 as a proposal guarantee. The right is reserved to accept or reject any or all bids submitted.

S. S. Lewis
Chairman

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for large copper company Chile, South America. Must be experienced in analytical work of all kinds, including complete analysis of ferrous and non-ferrous metals etc. Three year contract. Transportation both ways and salary while traveling paid by Company. In reply give complete details.
P-7564, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

CONSTRUCTION RESIDENT ENGINEER
Nationwide department store chain seeks supervisor of building construction. Will work on projects in Pa. with headquarters in central Pa. Duties will be to supervise construction, prepare progress reports, and check costs. Prefer Civil Engineer with electrical experience. Age 35-45. Salary $7,000-$7,500. Send complete resume of full experience and when available to:
P-7915, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

ENGINEERS - GEOLOGISTS
Technicians Experienced in Soils—Concrete and Asphalt Control Work.
Also
Graduate Engineers with P.E. Registration having extensive experience in Soils—Concrete and Asphalt. Location in Midwest.
P-7799, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED
An Alert Mechanical Engineer with Some Knowledge of Electrical Engineering . . . Must Be a Good Calculator . . .
PHILIPS & DAVIES, INC.
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POSITIONS VACANT
Superintendent and Foreman
Experienced in construction of sewers and water mains for work in or near Indianapolis, Indiana. This is a year round position for a capable and dependable superintendent. Please give experience, age and references.
P-7904, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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First class opportunity with a financially well-established national organization. Require high calibre, experienced men who can supervise manufacturing operations, take complete charge of large field projects.
P-7707, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WATER WORKS SUPERINTENDENT
To direct operations of the city water department. Deep well water supply system experience required. Engineering background desirable but not essential. Salary $480 per month. Apply:
CIVIL SERVICE COMMISSION
City Hall, Wauwatosa 13, Wisconsin.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

STRUCTURAL STEEL Designer wanted by a leading Middle West Fabricator—Experienced on industrial and commercial building. Permanent position and excellent opportunity with a large and established and growing company. Please state qualifications, past experience and salary requirements. P-7802, Engineering News-Record.

TRANSIT MAN—For inside and outside work. Must have thorough knowledge of engineering, drafting and calculating, and be thoroughly familiar with deed and conveyance work, and tax maps. Apply—Howard Madison, Township Engineer, 1 Main Street, Woodbridge, N. J. Phone Wo 8-1200, Extension 7.

CHIEF OF Party—Must be capable of handling survey parties and have thorough understanding of survey work pertaining to rights of way, curb and street line, sanitary and storm sewer surveys, and a thorough knowledge of general survey work. Apply—Howard Madison, Township Engineer, 1 Main Street, Woodbridge, N. J. Phone Wo 8-1200, Extension 7.

ENGINEER. TEXAS Manufacturer needs young sales and design engineer, also mechanical draftsmen familiar with crushing, screening, washing and cement machinery. Excellent opportunity in well established company. Write Box 1369, Dallas, Texas.

ENGINEER OR Architect as Resident on Gov't job. Thoroughly experienced man with Contractor experience. Job 40 miles from Baltimore. Write full details. Good pay for right man. P-7841, Engineering News-Record.

SALES MANAGER: Fine opportunity for right man with substantial company engaged in construction equipment field. To qualify must have experience in all branches of sales management including initiating product improvement and new products programs, directing field sales organization, building sound distributor organization and some knowledge of advertising and market forecasting. Send full particulars covering experience, education, etc., to P-7852, Engineering News-Record.

MUNICIPAL ENGINEER, with experience in design and construction of sewers. Must be registered in Ohio or able to obtain registration. Starting salary $5,000-$6,000 depending upon experience. Send resume of experience and qualifications and photographs if available to City Engineer, 500 Municipal Building, Dayton, Ohio.

WANTED—ENGINEERS experienced in water works, sewers, paving, buildings for design and supervision of construction; also architectural draftsmen. Advise education, experience, salary requirements, and when available. P-7920, Engineering News-Record.

POSITIONS VACANT

WANTED: EXPERIENCED sanitary-structural engineer capable of taking charge of drafting room for an engineering firm in Virginia engaged in the design of sewage treatment plants, sewerage systems, water filter plants and water distribution systems. State age, experience and salary expected. P-7901, Engineering News-Record.

SELLING OPPORTUNITY OFFERED

SALES ENGINEERS—Several territories in Mid-Atlantic States with established National concern selling prefabricated metal products to engineering and construction markets. Positions offered are permanent and present excellent future with aggressive, progressive and expanding organization. Engineering degree desirable. Previous sales experience unnecessary. Ages 24 to 30. RW-7778, Engineering News-Record.

POSITIONS WANTED

EXPERIENCED ARCHITECT'S Superintendent available June 1st desires position within 100 mile radius of Philadelphia, Pa. PW-7525, Engineering News-Record.

DANISH CIVIL Engineer in building construction, age 26, 2 years in U.S.A. 3½ years varied experience, heavy in estimating and supervising. Desires position with construction firm engineer or architect. Willing to travel. PW-7937, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT and Engineer, seventeen years practical experience on all types buildings, heavy jobs, roads and foundations, available immediately, have good record. PW-7936, Engineering News-Record.

CIVIL ENGINEER, graduate, 29, 5 yrs public works experience in field and office, on construction of docks, breakwaters, design, estimating. Desire permanent position with opportunity for advancement with firm in Minneapolis or California. Available July 1. PW-7947, Engineering News-Record.

CIVIL-SANITARY Engineer—Graduate registered, 10 years varied experience Consultant's offices. Mainly water supply-specs., design, studies. Some experience materials, sewage treatment. Prefer southern N.E. but will consider any location. PW-7944, Engineering News-Record.

MAINTENANCE SUPERINTENDENT — 19 years in top supervision of construction, maintenance and chemical plant equipment fabrication—installation. Proven ability to construct and stay on as maintenance head. Prefer South. PW-7900, Engineering News-Record.

ARCHITECTURAL DRAFTSMAN, Structural Engr., Industrial & Commercial bldgs. Prefer Central States. PW-7930, Engineering News-Record.

BRIDGE DESIGNER. Graduate Civil Engineer with experience estimating, detailing, designing and supervising design of short-span highway and railroad bridges desires change in association. Present salary $6,250. PW-7928, Engineering News-Record.

SUPERINTENDENT OR Estimator, graduate in Civil Engineering and two years Mechanical Engineering—13 years field experience in Power, Sewerage, Water and Chemical Plants, also Pulp Mill and Commercial Building. Desire a change from present position. PW-7921, Engineering News-Record.

SUPERINTENDENT—for Architect, Engineer or Contractor open for position May 25th. Thorough understanding construction and supervision. No design experience. Eastern States. Five figure bracket. Good personality, dependable. Address B-8, Colby-Park Apt., Rochester 10, N. Y.

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CAMP STEWARD, a practical man, has been trained as cook, baker, chef and steward. 58 years of age, single, strictly sober. Working at present but wish a change. PW-7753, Engineering News-Record.

PROJECT MANAGER with 20 years experience on power plants, water treatment plants, heavy industrial buildings and water front work. Will accept either foreign or domestic assignment. Excellent references. Available short notice. PW-7777, Engineering News-Record.

POSITION WANTED. Superintendent. 25 years construction experience, bridges, dams, treatment plants, pumping stations, concrete structure, sewer and water systems, heavy excavation, water front work, etc. Just off eleven million dollar warehouse job. Good organizer, know men and equipment. Familiar with labor and material costs and distribution. Reference upon request. Any location. Available immediately. PW-7022, Engineering News-Record.

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P-7934, Engineering News-Record
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BO-7941, Engineering News-Record
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CIVIL CONSTRUCTION, Irrigation & Drainage Engineer-Graduate Engineer. Thirty-five years diversified and progressive experience in technical administration, planning, investigation and supervision over heavy construction works. Recently completed foreign assignment investigating a project in Central America. Interested in position with major construction company or consulting engineering firm. PW-7685, Engineering News-Record.

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MECHANICAL ENGINEER desires foreign employment in Europe or Latin America. Age 34, married, one child. Previous Latin American experience. Spanish speaking. 15 years heavy experience in power, mining, construction. Presently employed by large construction firm. Available on short notice. Excellent references. Inquiries invited. PW-7842, Engineering News-Record.

CH. CONST. Eng., Registered, 20 yrs. exp. heavy construction. Estimating, planning, buying and supervision. PW-7198, Engineering News-Record.

CONST. ENG.—Ass't. Supt. Grad. C.E. Reg. N.Y. 9 yrs. exp. power plants and ind. const. PW-7881, Engineering News-Record.

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STRUCTURAL ENGINEER, licensed, 25 years buildings, foundations, industrial plants, waterfront structures, desires part time work. PTWW-7709, Engineering News-Record.

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1—IHC TD18 with Cable P.C.U. and Bucyrus Bulldozer
1—IHC TD24 with Cable P.C.U. and Bucyrus Bulldozer
1—AC HD19 with P.C.U. and Pusher Block
1—AC HD19 with Pusher Block
6—AC HD15A with P.C.U. and Angle or Bulldozer
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2—Lima 34E G.M. Diesel Crane Dragline and Backhoe
1—BE 15B Cat. Diesel Crane Dragline and Backhoe
1—Link Belt LS-52 Cat. Diesel Dragline and Backhoe
1—Link Belt LS-85 Cat. Diesel Crane and Dragline

TRUCK CRANES

2—Michigan TDL T-20 G.M. Diesel

MOTOR PATROLS

1—Galion Model 102 IHC Diesel
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1—AC AD-3 G.M. Diesel
2—AC AD-40 G.M. Diesel
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6—Hendrix TS ¾ yd. Dragline Buckets
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2—Hendrix TS 1 yd. Drag Line Buckets
2—Owens 1 yd. Clam Shell Buckets

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6—8" Well Point Pumps
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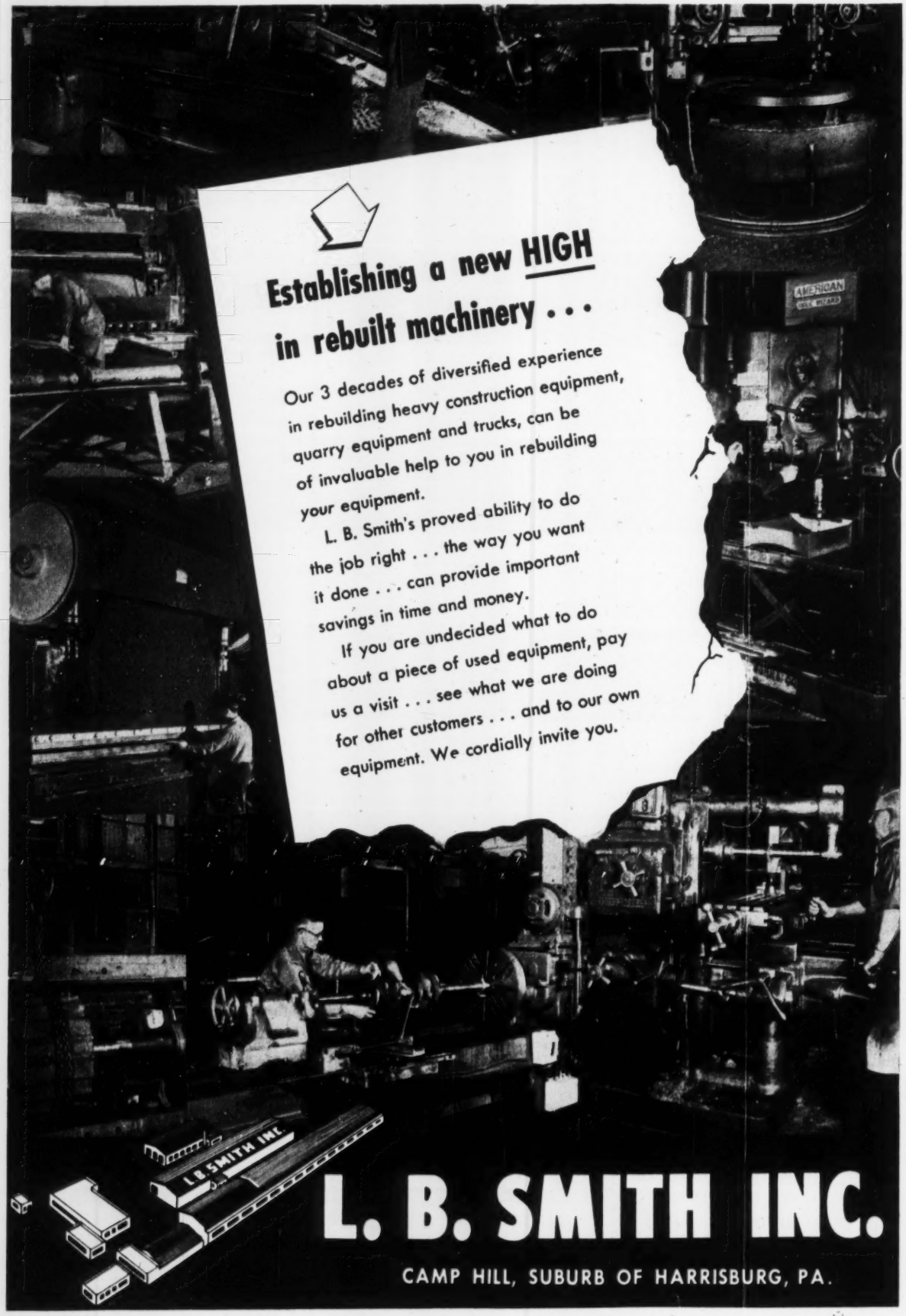

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VOL. 2 NO. 1

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¾-yd. Lorain, 40, LBS #8105, 44" cutting width.
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Lorain 75B, 1¼-yd. extended lip, 1¾-yd. LBS #2260.
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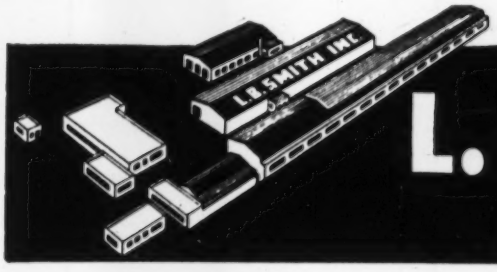

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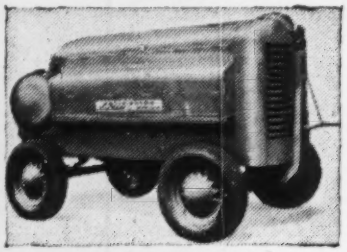

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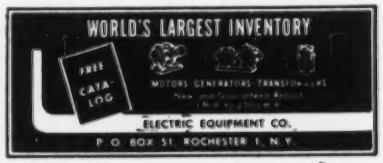

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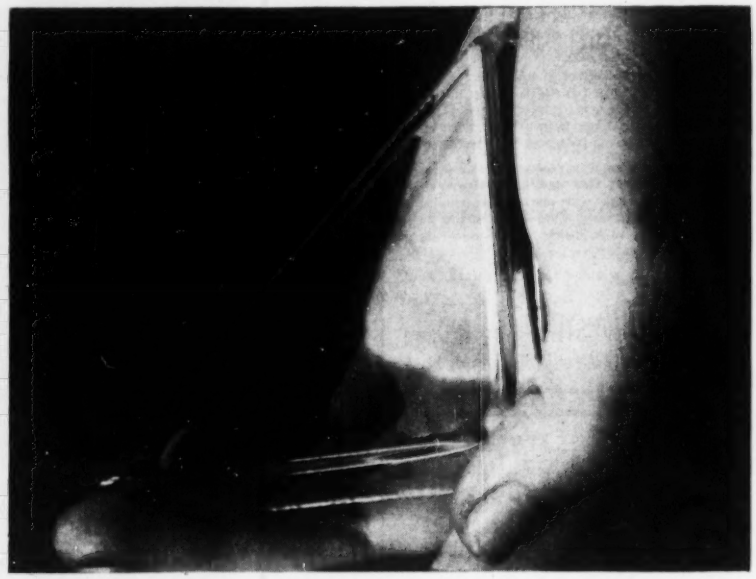
NEW PRODUCTS



SECTION of new insulating window illustrates double-glazed construction and glass-to-glass sealed edges.

All-glass insulating window

New unit combines the insulating properties of double windows with air-tight-fused edges

A new insulating window developed by the Pittsburgh Plate Glass Company is reported to be the first all-glass double-glazed unit of this type. Edges of the unit are electrically fused, providing a glass-to-glass seal and eliminating all metals, bonding materials or other assembled parts in its construction.

Twindoweld, as it is called, consists of two layers of $\frac{1}{8}$-in.-thick glass separated by a $\frac{3}{16}$-in. air space. In the manufacturing process, this air space is evacuated and then filled with specially prepared dry air to eliminate fogging in winter. Hermetic sealing eliminates the need of an included dessicant.

Insulating properties of the window are approximately the same as for assembled insulating windows now manufactured. It is claimed that under average conditions the new unit will reduce the amount of heat transfer by about one-half of the normal amount transferred through an equivalent area of conventional single-glazed windows.

Having no metal in its construction, the Twindoweld unit virtually eliminates edge conductivity and thus is particularly useful for air conditioning and refrigeration applications.

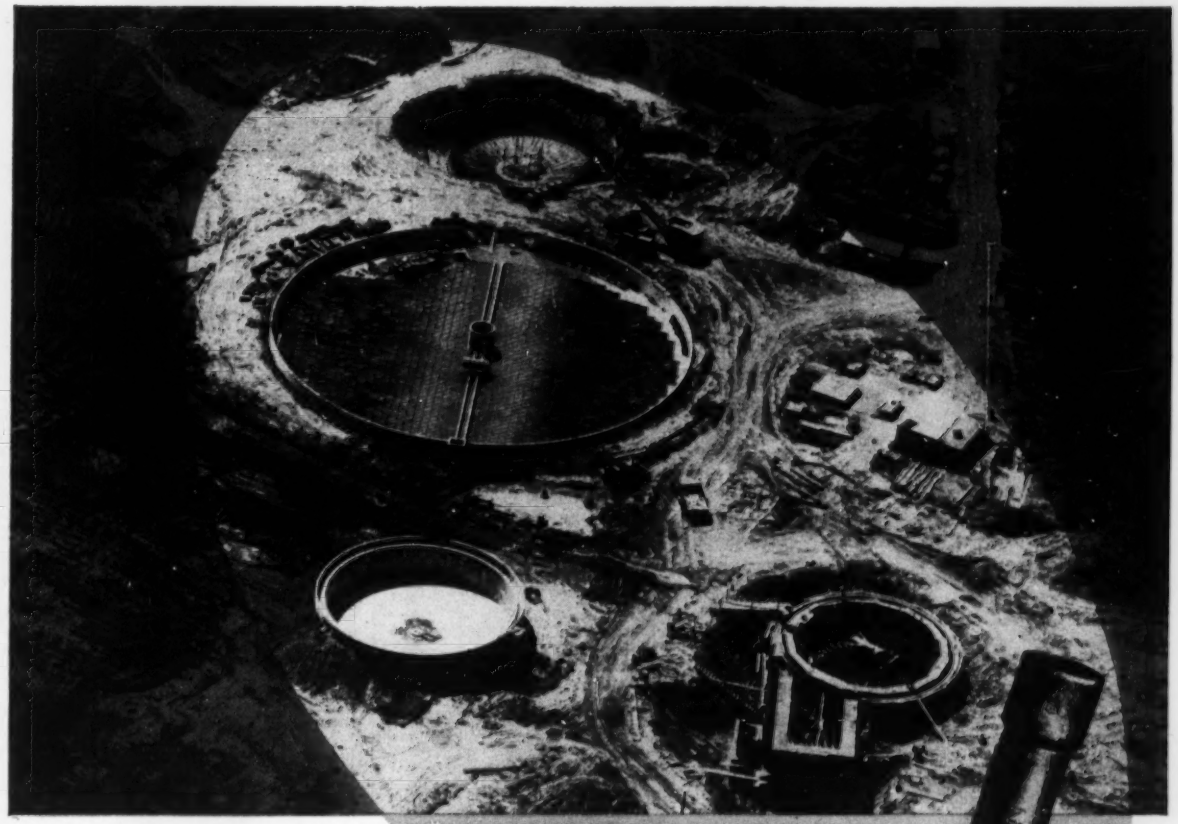
Available in sizes up to 50 in. x 60 in., the window is installed in the same manner as is used for a single thickness of glass. PITTSBURGH PLATE GLASS CO., 632 DUQUESNE WAY, PITTSBURGH, PA.

New membrane materials use no organic fibers

Two companies now produce flexible waterproofing sheets designed to replace asphalted felt as flashing, membrane and waterproofing material. Various combinations of asphalt, rubber, fiberglas and plastic are used to fabricate these products.

Duramat is a product of Glass Fibers, Inc., and is made from a glass fiber mat reinforced with parallel strands of glass yarn and coated with asphaltic materials. The product has the same weight per sq ft as 55-lb smooth surface roofing, but has more asphalt per unit area. This higher ratio results in longer life for the material under extreme weathering conditions.

Duramat may be used as a vapor barrier under basementless buildings and in refrigerated rooms, as a covering and a weathersealing for above-



In this new Independence, Mo. sewage treatment plant,

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ALL GAS PIPING

This $1,000,000 sanitary sewerage project is completely modern in all respects—including its answer to the corrosion problem. In those services listed above, all of which face corrosive attack, Byers Wrought Iron pipe was used.

In the aerial view, taken during the early stages of construction, you see the two clarifiers, the trickling filter and the digester and control building at the right. The project also includes two pumping stations, 1½ miles of 8 and 12-inch force mains and 7½ miles of sewers ranging in size from 10 to 36 inches in diameter. Consulting engineer: Charles A. Haskins, Kansas City; contractor: Lippert Brothers, Inc., Oklahoma City, Okla.

Whether your sewage treatment plant is large or small, successful, economical operation depends heavily on the proper selection of material. Short-lived piping means early and costly repairs, and a heavy burden on the budget. Byers Wrought Iron pipe has demonstrated its exceptional qualities in practically every corrosive service, and provides a sound means of getting maximum life from the installation, with lower cost per year.

Our bulletin, WROUGHT IRON FOR SEWAGE TREATMENT AND DISPOSAL INSTALLATIONS, discusses the problems of corrosion encountered in numerous individual services. You'll find it helpful and informative. Write for a copy.

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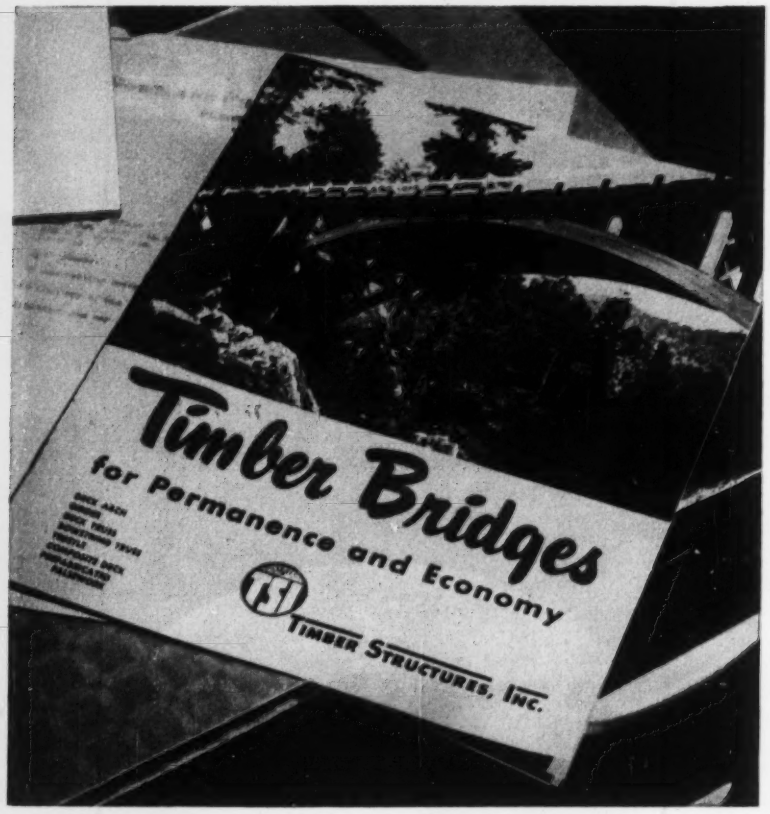

Guide to

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Here is a new booklet which will tell you how to accomplish more with your bridge funds. It contains information on standard timber bridges of Timber Structures, Inc., America's largest and most experienced laminators and fabricators of structural timbers.

Bridges included in the book are deck arch, girder, deck truss, bowstring truss, trestle and composite deck types. Each is illustrated with photographs and schematic drawings. All these bridges are adaptable for any loading, and one or more of them will meet the requirements of almost all bridge sites.

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ground insulated pipes and exposed ducts and as a lining for ditches, swimming pools and reservoirs.

The second manufacturer of these materials is the Rubber & Plastics Compound Co., Inc., producers of Nervastral Seal-Pruf sheetings. These sheets are available in three different types.

The first type is composed of a straight mixture of 68 per cent synthetic rubber and 32 per cent asphalt. No fibrous material is included and the sheeting therefore is easily torn; however, the elimination of fiber also takes away the chief source of decay in materials of this type. The sheets are made in 28 and 58-mil thicknesses.

A second type of sheeting made by the company includes a fiber glass mat between two laminations of the 68:32 rubber-asphalt mixture. This adds strength without including a decay-vulnerable fiber, but cost of the material is higher and strength less than the third type of sheeting.

Type H-D contains no asphalt whatsoever but is made of vinyl plastic and rubber. It is extremely resistant to tearing and high temperatures. Easily the strongest of the three types, the H-D is nevertheless also the lightest per unit area. Cost compares favorably with the heavier grade of Nervastral fiberless sheeting.

Nervastral sheetings may be used for the same purposes as Duramat and also as a flexible flashing material.

Methods of application are conventional. For information on the use of these new materials and asphalted felt as a membrane material beneath slab-on-grade construction, see the Research section in this issue. Glass Fibers, Inc., 1810 Madison Ave., Toledo, Ohio: Rubber & Plastics Compound Co., Inc., 30 Rockefeller Plaza, New York 20, N. Y.

Self-sharpening sawblade reduces wear

According to the Wright Power Saw & Tool Corp., sawblades are not worn out from sawing but from filing and sharpening. This wear is said to be almost eliminated in the new Sabre blades by the application of hard chrome plating to the cutting edges and an improved tooth design.

The company claims that there is always a sharp chromed edge on the cutting surface as the sawblade steel wears away. In addition, when it does become necessary to refile the blade, no special saw filing skill is required; the file is drawn straight across the front face of the teeth.

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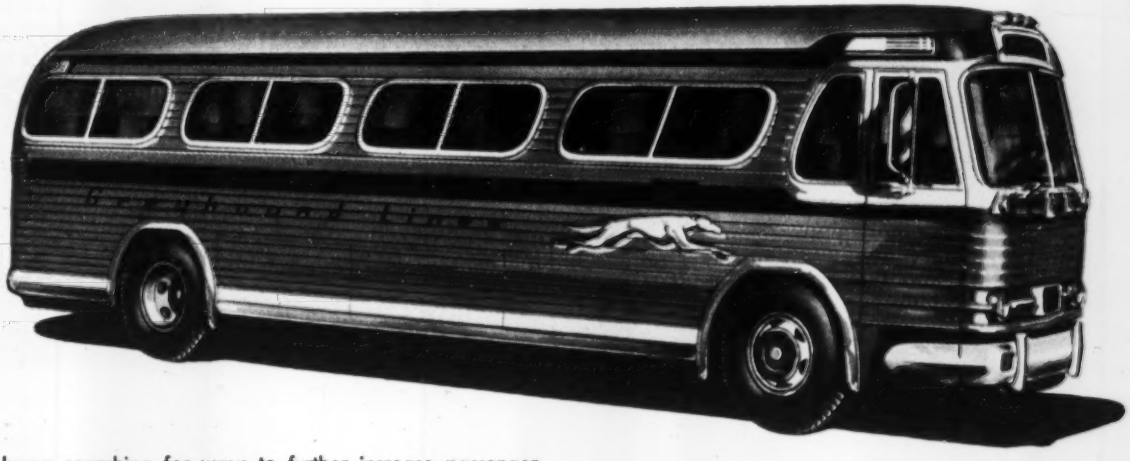

Always searching for ways to further increase passenger safety, Greyhound Lines selected Vickers Hydraulic Power Steering for the 400 new Model PD-4104 GM Coaches recently purchased.

Vickers Hydraulic Power Steering prevents the possible loss of driver control when a vehicle is forced off the pavement onto a soft shoulder . . . or when a front tire blows out. Extra steering power and quick maneuverability are always available for emergency conditions.

The Vickers System absorbs all road shock and transmits it to the vehicle frame . . . there can be no kick-back at the steering wheel. The driver supplies only enough effort to slightly move a servo valve . . . fatigue is thus greatly reduced and the driver is more alert.

Only minor alterations are usually required to incorporate Vickers Hydraulic Power Steering in new and existing vehicle designs. For further information, ask for new Bulletin M-5104.

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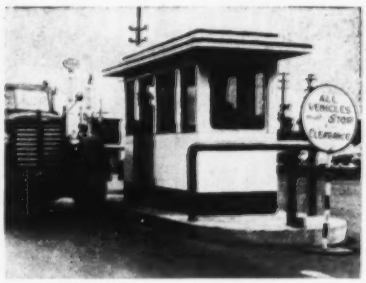
The new blade is designed for use with the pneumatic Wright saw. WRIGHT POWER SAW & TOOL CORP., 292 LONGBROOK AVE., STRATFORD, CONN.

Pre-assembled toll house units bolt into place

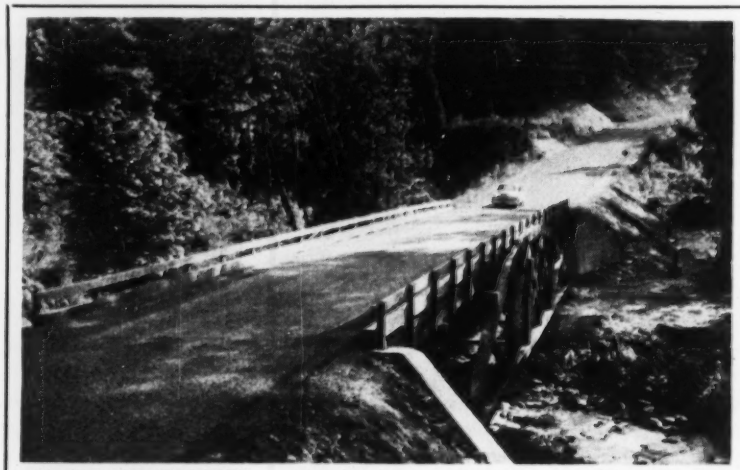
Not a pre-fab, this toll or gate house comes from the factory completely finished and equipped, ready for installation on a prepared foundation. It requires only bolting in position and making power connections to place it in service.

Design of the structure includes glare-proof and shatter-proof sliding windows, two electric heaters, an intercom system, fluorescent lighting and drop seats for the attendants. Another feature is the splash guard



around each door. Hinged to allow easy access to the building, the aluminum guards protect the attendants from being splashed during inclement weather.

The porcelain enameled structure is custom-made to comply with each user's specific needs. THE ERIE ENAMELING CO., ERIE, PENNSYLVANIA.



BOWSTRING TRUSSES spanning 113 ft support a two-lane road in Multnomah County, Ore. Glued laminated floor beams are carried by top chord and vertical members of trusses.

Wood truss bridge has clear deck

A new bridge for Multnomah County, Oregon, is supported on glued laminated timber bowstring trusses, which are not visible from the roadway. This is accomplished by supporting the floor beams well above the bottom chord.

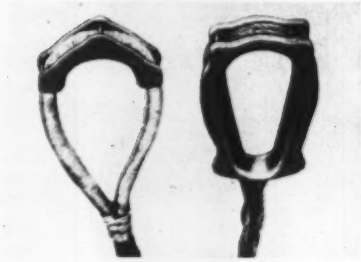
Advantages of having no part of the structure extending above the handrails are that traffic visibility is greatly improved and overhead clearance is unlimited.

The bridge spans 113 ft and has a roadway width of 24 ft between wheel guards. Designed for H-20 loading, the structure spans Gordon Creek near Troutdale, Ore.

Top chords of the trusses are 11x17⅞ in., bottom chords are 11x13 in., and floor beams are 11x34 in. All are glued laminated timbers. Structural members are pressure creosoted, thus eliminating the necessity for maintenance painting. Joints are made with split-ring connectors or shear plates and heavy gusset plates.

The deck consists of 4-in. plank on stringers. Handrail, wheel guards and deck planking are treated with preservative salts.

The structure was built by Birkemeier & Saremal, Portland, Ore. The bridge is a new development of TIMBER STRUCTURES, INC., P. O. Box 3782, PORTLAND 8, ORE.



Re-usable sling thimbles cut replacement costs

Users of wire rope slings can reduce replacement costs by employing re-usable thimbles, says the A. Leschen & Sons Rope Co.

A new eight-part braided sling features Pin-Lock thimbles attached by pins instead of the conventional hammered-down clamps. Since the thimble usually outlasts the sling itself the company claims that savings up to 20% of the cost of new slings can be realized through the re-use of them. A. Leschen & Sons Rope Co., 5909 Kennerly Ave., St. Louis 12, Mo.

New Products briefs . . .

• **Light drill**—A lightweight ¼-in. drill is available from Stanley Electric Tools, New Britain, Conn. The drill comes in six standard chuck speeds ranging from 5,000 to 600 rpm. Maximum length of the drill is 8½ in. Maximum weight 3⅜ in. The Universal motor operates on either a-c or d-c, 60 cycles or less.

• **Battery capacity**—Twenty percent more capacity in the same space is claimed for the new line of T-H Exide Ironclad batteries marketed by the Electric Storage Battery Company, P. O. Box 8109, Philadelphia 1, Pa. The new battery is essentially the Exide Ironclad into which new materials and structural changes have been incorporated.

• **Saw blades**—A new line of diamond blades for masonry saws is being introduced by the Robert G. Evans Company, 6315 Brookside Plaza, Kansas City 15, Mo. Cutting segments on the rim have been increased 50% in depth to make possible increased blade life. No change in the basic formula has been made except to increase the amount of diamond and metal powder 50%.

The new series, called Target "Super-rim" diamond blades, can be used for cutting glazed brick and tile, terra cotta, sewer pipe, stone, quarry tile, etc.

Does the wire rope you use win this kind of praise?
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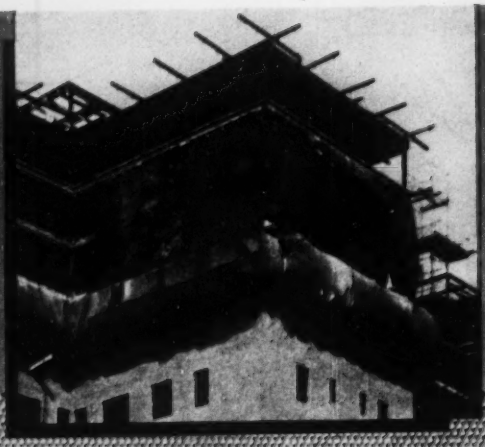

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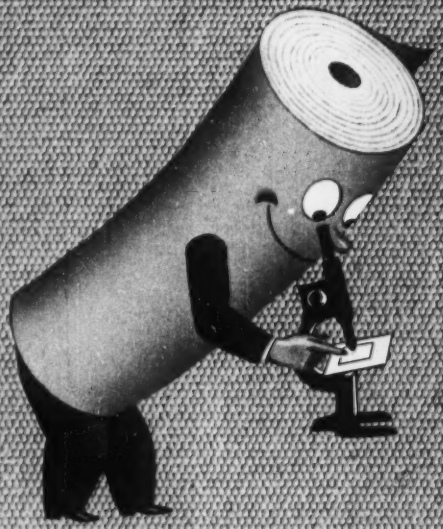

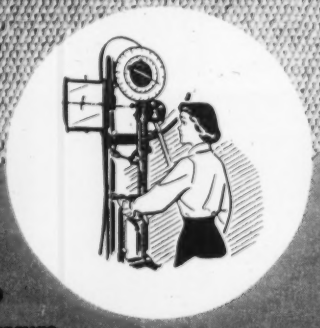

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American Lumber & Treating Co. 81
Arkwright Finishing Co. 71
Armco Drainage & Metal Prods., Inc. ..... 2nd Cover

Barber-Greene Co. 127
Bethlehem Steel Co. 44
Blaw-Knox Div., Blaw-Knox Co. 70
Borden & Riley Co. 85
Bruning Co., Inc., Charles 14
Buck Equip. Corp. 62
Buda Co., The 92
Butler Mfg. Co. 87
Byers Co., A. M. 121

Cardox Corp. 69
Cement Gun Co. 106
Central Surety & Insurance Co. 105
Chicago Pneumatic Tool Co. 78
Concrete Reinforcing Steel Institute 29
Construction Machinery Co. 88

Dicalite Div., Gt. Lakes Carbon Corp. 83
Dow Chemical Co. 6
Du Pont de Nemours & Co., Inc., Finishes Div. 101

Eastman Kodak Co. 53
Economy Forms Corp. 54
Eimco Corp., The 67
Electric Tamper & Equip. Co. 100

Fabreeka Products Co. 34
Fennel Instr. Corp. of Amer. 88
Flintkote Co., The 102
Foundation Equip. Corp. 90

General Electric Co., Electronics Dept. 51
Grace Mfg. Co., W. E. 86
Greenlee Tool Co. 82
Griffin Wellpoint Corp. 86
Gunite Concrete & Const. Co. 105
Gunite Construction Corp. 96

Harnischeeger Corp. 1
Heltzel Steel Form & Iron Co. 95
Hendrix Mfg. Co. 37
Homelite Corp. 55

Ingersoll Rand Co. 12
International Harvester Co. 38
International Steel Co. 79
Irving Subway Grating Co. 127
Irvington Form & Tank Corp. 57

Jaeger Machine Co. 74, 75

Kern Instrument Co. 85

Laclede Steel Co. 96
LeRoi Company 97
Leschen & Sons Rope Co., A. 125
LeTourneau, Inc., R. G. 73
Lewis & McDowell, Inc. 86
Littleford Bros., Inc. 94
Lone Star Cement Corp. 18

Madsen Iron Works, Inc. 77
Mahon Co., R. C. 64
Marietta Concrete Corp. 124
Master Vibrator Co. 76
McCaffery-Ruddock Tagline Corp. 49
McGraw-Hill Book Co. 54
Michigan Power Shovel Co. ..... 3rd Cover
Minneapolis-Moline 56
Murray Associates, Ltd. 89

Northwest Engineering Co. 3

Oliver Corp. 80
Owens-Illinois Glass Co. 72

Pennsylvania Drilling Co. 94
Philippine Airlines 100
Pipe Linings, Inc. 99
Pittsburgh Coke & Chemical Co. 11
Portland Cement Assn. 41

Raymond Concrete Pile Co. 61
Reynolds Metal Co., Inc. 58
Robertson Co., H. H. 63
Rucquoi, Leon G. 54
Ryerson & Sons, Inc., Jos. T. 16

Sauerman Bros., Inc. 106
Schramm, Inc. 91
Seaman Motors 48
Servicised Products Co. 100
Sika Chemical Corp. 66
Snow-Nabstedt Gear Corp. 90
Sprague & Henwood, Inc. 96
Staedtler Co., J. S. 120
Standard Dry Wall Products 99
Stang Corp., John W. 33
Stone & Webster Engineering Corp. 84

Taller & Cooper, Inc. 50
Texas Co. 4, 5
Timber Engineering Co. 68
Timber Structures, Inc. 122
Timken Roller Bearing Co. ..... 4th Cover
Tinney Drilling Co. 105
Trailer Village, Inc. 90
Trans-Global Co. 2
Turner-Halsey Co. 126

Union Wire Rope Corp. 93
Unit Crane & Shovel Corp. 10
Universal Atlas Cement Co. 20
Universal Form Clamp Co. 30

Vickers, Inc. 123
Victaulic Co. of Amer. 7

Waukesha Motor Co. 52
Weil Pump Co. 98
Williams Co., J. H. 94
Wooldridge Mfg. Co. 15

Professional Services 110

SEARCHLIGHT SECTION

(Classified Advertising)

H. E. Hilty, Mgr.

Employment 110-112

Special Services 112

Educational 112

Business Opportunities 112

Notices 107-109

Equipment
(For Sale—Rent—Wanted 112-119

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EDITORIALS

Innocents abroad

AMERICAN ENGINEERS and contractors seeking work abroad for the first time are learning that some countries differ from ours in ways other than climate and language. As an example one such U. S. firm recently received the following unsolicited letter:

"My firm is fully disposed to cooperate with you in as far as local contacts are concerned, purchase of local items, supplying of labor and skilled labor, etc., and you must rest certain that you will have full assistance to make your job a success. Of course, everything depends upon the figures you will quote and the delivery conditions, etc.

"As to our mark-up, we suggest that you include 5% remuneration for us in your quotations. This percentage will be also used to smooth up matters to your favour and we might most probably request you, if need arises, to disburse special sums that would ensure for you the success of your bid.

"You are, therefore, kindly requested to write us in full about the whole proposition."

The next step for such a letter, normally, would be the waste basket. It was passed on to us as evidence that American engineers seeking work abroad are going to meet evidence of tolerance, if not acceptance, of sharp and shady practices that are outside the pale of honesty and ethics as we know them.

The fact remains that foreign associates are frequently useful and necessary in bidding and working abroad. The only safe and honestly American way to join up with them is to keep all of the arrangements out in the open. The better ones will want it that way, the others are merely working a racket based on a hope that Americans are "innocents abroad".

Bolstering the home-building market

JUST IN CASE the market for new houses should turn sour, the National Association of Home Builders is now endeavoring to open new markets for its members. Among the steps it is taking are: (1) development of a trade-in program for houses, and (2) pushing rehabilitation by private enterprise of run-down urban areas.

The trade-in program, as envisioned at present, would be of great assistance to home owners who have outgrown their present quarters or improved their financial status and wish to purchase larger and more expensive housing. NAHB is working with the Federal Housing Administration to develop a loan procedure to enable owners to transfer the equity in their present house to a new one. If the program is successful, it would do more than expand the market for new houses. The homebuilders plan to recondition the old houses before putting them back on the market—at a higher price. Thus, the modernization phase of this program could prove to be a profitable enterprise.

The program for rehabilitation of slum areas also has possibilities of opening a lucrative market to homebuilders. Present plans call for block by block clean-up of slums. Dwellings that can be salvaged will be rebuilt to meet at least the minimum standards of health, safety and welfare. Officials of NAHB estimate that as many as 750,000 existing houses could be modernized each year, if satisfactory financing is made available.

These programs are worthy of industry backing. In both cases, they represent more than the possibility of new or additional construction business. They also offer the opportunity of providing a badly needed public service. For the reconditioning of old houses will prevent the development of new slums. And the rehabilitation of existing slums will give many a family a decent home at a price it can afford.

No private toll roads

REFUSAL of the Virginia Highway Commission to agree to take stock in the Virginia Interstate Turnpike Corp. (ENR April 2 p. 17) probably has blocked the latest attempt of private promoters to get a foothold in the field of toll road construction. If this conclusion proves to be correct, the commission's refusal may serve to provide a desirable check against any further spread of the private toll road movement.

Virginia has been the chief center of this movement. It began in 1951 with the granting of charters to two private corporations. One of these corporations carried its activities to the point of having engineers prepare plans that could be used as the basis for an approach to bankers for financing. Apparently the bankers were not inclined to put money into a project in which no public agency had an interest. Last year the promoters of that project and of the more ambitious project of the Virginia Interstate Turnpike Corp. had their charters amended to permit them to transfer their stock to the Virginia Highway Commission or to political subdivisions of the state. In this way, the promoters hoped to make their projects more attractive to banking houses.

This scheme now has been rejected by the Highway Commission. That rejection and the fact that the Virginia General Assembly last year authorized the commission to build toll roads, if they are found to be needed, would appear to mark the end of the private toll road movement in Virginia.

The significance of these happenings goes far beyond the borders of Virginia. Had one of the private projects in that state advanced to the point of actual financing, many private toll road projects would have sprung up in other states to harrass the state highway departments.

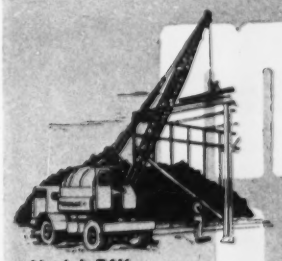
FIELD JOB REPORT

OWNER:	Carl Goodwin & Sons, Allegan, Michigan.
PROJECT:	Grading and Paving 5½ miles on highway M-140, Watervliet, Michigan.
CONDITIONS:	Blue clay...average digging depth, 14 feet.
EQUIPMENT:	MICHIGAN MODEL C-16 HOE with 31-inch dipper. Powered with GM 2-71 diesel. Crawler pads 30 inches wide.
REMARKS:	Wayne Goodwin reports complete satisfaction with his new MICHIGAN C-16 HOE. New gooseneck boom digs down to 18 feet. Real stability is assured with the C-16's 10'-1" wide, 11'-10" long crawler base. The 30-inch wide pads give a ground bearing area of 7,440 square inches.

WRITE FOR BULLETIN 1601 SUP.

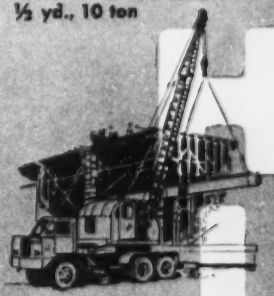
MICHIGAN POWER SHOVEL COMPANY

Benton Harbor, Michigan, U. S. A.

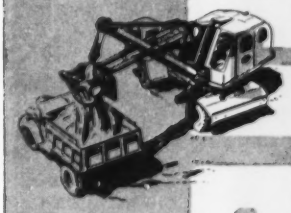


Model T6K
⅜ yd., 6 ton

Model TMDT-16
½ yd., 10 ton



Model TLDT-20
12 ton



Series 8
½ yd., 8 ton

Model C-16
½ yd., 8 ton

Here's why so many companies use TIMKEN® bearings in crown and traveling blocks

CROWN and traveling blocks are more stable, need less maintenance, last longer when the sheaves are mounted on Timken® bearings.

Timken bearings hold sheaves in accurate alignment—take radial and thrust loads in any combination.

Heavy cable loads are no problem for Timken bearings because line contact gives them load-carrying capacity to spare.

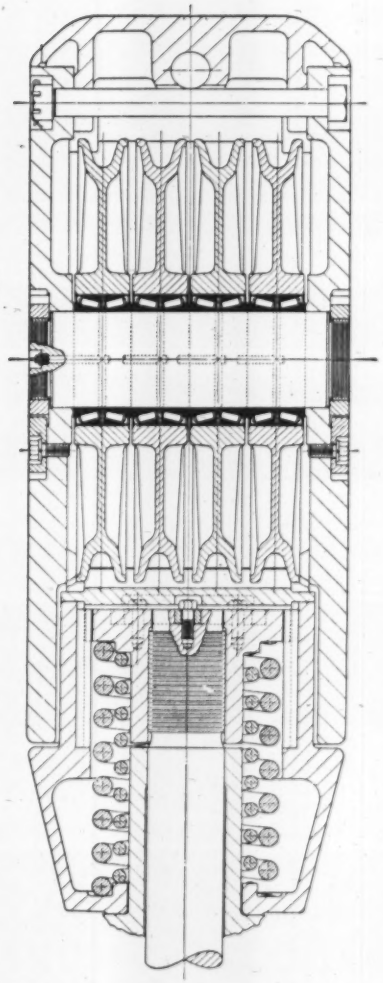
Sudden shock loads are taken with ease because Timken bearings are case hardened to give them hard wear-resistant surfaces and tough shock-resistant cores.

Because Timken bearings have true rolling motion and smooth surface finish, bearing friction is minimized. Sheaves turn easily—cables last longer.

Closures are more effective. Dirt and moisture stay out, lubricant stays in, because Timken bearings hold sheaves and shaft concentric.

Be sure to specify Timken bearings in the equipment you build or buy. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



Typical mounting of Timken tapered roller bearings in a traveling block.

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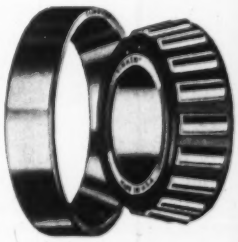
TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ⊂⊃ THE TIMKEN TAPERED ROLLER ⊂⊃ BEARING TAKES RADIAL ○ AND THRUST ⊂⊃ LOADS OR ANY COMBINATION